

A.10 Ground Water Quality

NOT INCLUDED IN THIS DRAFT

A.10.1 Nutrient – Pathogen Studies

NOT INCLUDED IN THIS DRAFT

A.10.2 Interim Guidance on the Ground Water Quality Rule

NOT INCLUDED IN THIS DRAFT

A.10.3 Rule

NOT INCLUDED IN THIS DRAFT

A.11 Standard Permits

NOT INCLUDED IN THIS DRAFT

A.11.1 Performance Standard Permits

TBD - NOT INCLUDED IN THIS DRAFT

A.11.2 Standard Municipal Permits

User's Guide
for the
Standard Municipal Wastewater-Land Application Permit Template

02/15/04

Introduction

The Standard Municipal Wastewater Land Application Permit Template is a guidance document for writing Municipal permits. There may be permit specific issues that are not addressed in this template or parts of the template that may not be applicable to the site you are permitting. The template serves to provide for consistent permit limits and language where appropriate.

The template includes a section for abbreviations/acronyms and the layout is arranged to put permit specific information at the beginning and standard limits, requirements, and conditions towards the end of the permit.

The language that appears in yellow highlight is optional and inclusion in the permit needs to be evaluated on a case-by-case basis by the permit writer.

The Wastewater Program Office, as time permits, will update this template. If you have suggestions for modifying the template, please contact Mark Mason at (208) 373-0266.

Section E. Compliance Schedule for Required Activities

Plan of Operation – Inclusion of this compliance activity will depend on the status of the Plan of Operation at the time of permitting. If an existing facility has an adequate Plan of Operation, this is obviously not necessary. For new facilities or re-permits involving significant modifications, this requirement may be appropriate.

Nuisance Odor Management Plan – Preference would be to have the applicant submit this plan with permit application materials, especially for new systems or if there is significant public interest.

TDIS Management Plan – If ground water modeling indicates significant TDS impacts to ground water, this compliance activity should be included.

Water Quality Improvement Plan (WQIP) – For sites that have existing ground water quality that exceeds the limits in the *Ground Water Quality Rule* (IDAPA 58.01.11) for primary or secondary standards as a result of land application activities, a WQIP may be required. The WQIP requires mapping areas where ground water has been impacted. For areas where ground water quality standards are exceeded, a plan to improve ground water quality, with the objective of attaining standards is required. For areas where ground water quality is degraded, but ground water quality standards are not exceeded, best management practices or other measures described in the

GWQR, section 58.01.11.400.02 shall be developed and implemented. For example language, consult with the Wastewater Program Office.

Waste Solids Management Plan – Site specific.

Buffer Zone Plan – The applicant should provide this information as part of the permit application materials. However, for new sites that are in design, this compliance activity may be required. Facilities may be developing plans for the irrigation system during the same timeframe as the draft permit.

Ground Water Monitoring Plan – Site specific. Typically required for new facilities where it is determined ground water monitoring is necessary. May also be required for re-permitting sites in which the existing network is inadequate.

Section F. Special Permit Conditions

Supervision – Requiring supervision of the wastewater treatment system is optional. Poor past management or complex wastewater pretreatment systems prior to land application are considerations. Also helpful for simple systems where operator is not technically proficient.

Section G. Monitoring Requirements

Composite Sampling - Dependent on wastewater system. For systems with wastewater quality that is variable within a 24-hour period, the system should provide composite samples. For systems that quality does not vary significantly on a daily basis, grab samples are appropriate.

Bacterial Sampling – Required.

Appendix 1. Environmental Monitoring Serial Numbers

Instructions for serial number assignment. Serial Numbers for monitoring points are formatted as follows. XX-xxxxxx. The upper case XX signifies the type of point (MU, WW, SW...). This is followed by a hyphen. The first four lower case x's signify the last four numbers of the permit, excluding the suffix. The last two lower case x's signify the actual point location. If the permit area expands over the life of the project, the point location numbers are just continued and expanded as necessary. No allowance is necessary for suffixes or new expansion area designation.

A. Permit Certificate

**MUNICIPAL
WASTEWATER-LAND APPLICATION PERMIT**

LA-000xxx-0x

Facility Name, LOCATED AT Street address, city, ID xxxxx-xxxx
AND IN Township(s) xx, Range(s) xx, Section(s) xx IS HEREBY
AUTHORIZED TO CONSTRUCT, INSTALL, AND OPERATE A
WASTEWATER-LAND APPLICATION SYSTEM IN ACCORDANCE
WITH THE WASTEWATER-LAND APPLICATION RULES (IDAPA
58.01.17), THE WATER QUALITY STANDARDS AND
WASTEWATER TREATMENT REQUIREMENTS (IDAPA 58.01.02),
THE GROUND WATER QUALITY RULE (IDAPA 58.01.11), AND
ACCOMPANYING PERMIT, APPENDICES, AND REFERENCE
DOCUMENTS. THIS PERMIT IS EFFECTIVE FROM THE DATE OF
SIGNATURE AND EXPIRES ON **(60 months from issue date).**

Name of RO Administrator
Title i.e. (REGION) Regional Administrator
Idaho Department of Environmental Quality

Date:

DEPARTMENT OF ENVIRONMENTAL QUALITY

Regional Office Address
Regional Office Phone No.

POSTING ON SITE RECOMMENDED

B. Permit Contents, Appendices, and Reference Documents

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A. Permit Certificate	x
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Appendices

1. Environmental Monitoring Serial Numbers
2. Site Maps

References

1. Plan of Operation (Operation and Maintenance Manual)
 - Nuisance Odor Management Plan
 - Waste Solids Management Plan
 - Etc. — see checklist in Handbook

The Sections, Appendices, and Reference Documents listed on this page are all elements of Wastewater-Land Application Permit LA-000xxx-0x and are enforceable as such. This permit does not relieve Company Name, hereafter referred to as the permittee, from responsibility for compliance with other applicable federal, state or local laws, rules, standards or ordinances.

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C. Abbreviations, Definitions

Comment: Items throughout template that are highlighted in yellow are options for considerations and additional thought as to application to a particular permit. Those items may be included, modified or deleted.

Ac-in	Acre-inch. The volume of water or wastewater to cover 1 acre of land to a depth of 1 inch. Equal to 27,154 gallons.
BMP or BMPs	Best Management Practices
COD	Chemical Oxygen Demand
DEQ or the Department	Idaho Department of Environmental Quality
Director	Director of the Idaho Department of Environmental Quality, or the Directors Designee, i.e. Regional Administrator
ET	Evapotranspiration – Loss of water from the soil and vegetation by evaporation and by plant uptake (transpiration)
GS	Growing Season – Typically April 01 through October 31 (214 days)
GW	Ground Water
GWQR	IDAPA 58.01.11 "Ground Water Quality Rule"
Guidelines	Guidance for Land Application of Municipal and Industrial Wastewater, DEQ.
HLRgs	Growing Season Hydraulic Loading Rate. Includes any combination of wastewater and supplemental irrigation water applied to land application hydraulic management units during the growing season. The HLRgs limit is specified in Section F. Permit Limits and Conditions
HLRngs	Non-Growing Season Hydraulic Loading Rate. Includes any combination of wastewater and supplemental irrigation water applied to each hydraulic management unit during the non-growing season. The HLRngs limit is specified in Section F. Permit Limits and Conditions.
HMU	Hydraulic Management Unit (Serial Number designation is MU)
IWR	<p>Irrigation Water Requirement – Any combination of wastewater and supplemental irrigation water applied at rates commensurate to the moisture requirements of the crop, and calculated monthly during the growing season (GS). Calculation methodology for the IWR can be found at the following website: http://www.kimberly.uidaho.edu/water/appndset/index.shtml. The equation used to calculate the IWR at this website is:</p> $IWR = (CU - P_e) / E_i$ <p>CU is the monthly consumptive use for a given crop in a given climatic area. CU is synonymous with crop evapotranspiration</p> <p>P_e is the effective precipitation. CU minus P_e is synonymous with the net irrigation requirement (IR)</p> <p>E_i is the irrigation system efficiency. To obtain the gross irrigation water requirement (IWR), divide the IR by the irrigation system efficiency.</p>
IDAPA	Idaho Administrative Procedures Act.
LG	Lagoon
lb/ac-day	Pounds (of constituent) per acre per day
MG	Million Gallons (1 MG = 36,827 acre-inches)
MGA	Million Gallons Annually (per WLAP Reporting Year)
NGS	Non-Growing Season – Typically November 01 through March 31 (151 days)
NVDS	Non-Volatile Dissolved Solids (= Total Dissolved Solids less Volatile Dissolved Solids)
O&M manual	Operation and Maintenance Manual, also referred to as the Plan of Operation

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C. Abbreviations, Definitions

SAR	Sodium Absorption Ratio
SI	Supplemental Irrigation water applied to the land application treatment site.
Soil AWC	Soil Available Water Holding Capacity - the water storage capability of a soil to a depth at which plant roots will utilize (typically 60 inches or root limiting layer)
SMU	Soil Monitoring Unit (Serial Number designation is SU)
SW	Surface Water
TDS	Total Dissolved Solids or Total Filterable Residue
TDIS	Total Dissolved Inorganic Solids – The summation of chemical concentration results in mg/L for the following common ions: calcium, magnesium, potassium, sodium, chloride, sulfate, and 0.6 times alkalinity (alkalinity expressed as calcium carbonate). Nitrate, Silica and fluoride shall be included if present in significant quantities (i.e. > 5 mg/L each).
TMDL	Total Maximum Daily Load – The sum of the individual waste-load allocations (WLA's) for point sources, Load Allocations (LA's) for non-point sources, and natural background. Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. IDAPA 58.01.02 <i>Water Quality Standards and Wastewater Treatment Requirements</i>
Typical Crop Uptake	Typical Crop Uptake is defined as the median constituent crop uptake from the three (3) most recent years the crop has been grown. Typical Crop Uptake is determined for each hydraulic management unit. For new crops having less than three years of on-site crop uptake data, regional crop yield data and typical nutrient content values, or other values approved by DEQ may be used.
USGS	United States Geological Survey
WLAP	Wastewater Land Application Permit (or Program)
WLAP Reporting Year	The reporting year begins with the non-growing season and extends through the growing season of the following year, typically November 01 – October 31. For example, the 2000 Reporting Year was November 01, 1999 through October 31, 2000.
WW	Wastewater applied to the land application treatment site

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D. Facility Information

Legal Name of Permittee	
Type of Wastewater	
Method of Treatment	
Type of Facility	
Facility Location	
Legal Location	
County	
USGS Quad	
Soils on Site	
Depth to Ground Water	
Beneficial Uses of Ground Water	
Nearest Surface Water	
Beneficial Uses of Surface Water	
Responsible Official Mailing Address	
Phone / Fax	
Facility Consultants Mailing Address	
Phone / Fax	

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E. Compliance Schedule for Required Activities

Optional items to be edited are highlighted in yellow.

The Activities in the following table shall be completed on or before the Completion Date unless modified by the Department in writing.

Compliance Activity Number Completion Date	Compliance Activity Description
CA-xxx-xx Prior to applying wastewater at site	<p>A Plan of Operation (Operation and Maintenance Manual or O&M Manual) for the wastewater land application facilities, incorporating the requirements of this permit, shall be submitted to DEQ for review and comment. The O&M manual shall be designed for use as an operator guide for actual day-to-day operations to meet permit requirements and shall include daily sampling and monitoring requirements to insure proper operation of the wastewater treatment facility. The Plan of Operation shall contain at a minimum all of the information required by the latest revision of the Plan of Operation Checklist in the WLAP Program Guidance.</p> <p>Upon approval, the manual shall be incorporated by reference into this permit and shall be enforceable as a part of this permit.</p>
CA-xxx-xx Prior to applying wastewater at site	Submit a Nuisance Odor Management Plan to DEQ for review and approval. The Odor Management Plan shall include wastewater treatment systems, land application facilities, and other operations associated with the facility. The plan shall include specific design considerations, operation and maintenance procedures, and management practices to be employed to minimize the potential for or limit odors. The plan shall also include procedures to respond to an odor incident if one occurs, including notification procedures.
CA-xxx-xx Prior to applying wastewater at site	A TDIS Management Plan may be required if ground water TDS significantly increases across the site. The plan shall identify sources of TDIS, evaluate the feasibility of isolation or removal of TDIS, and propose strategies to minimize TDIS in the wastewater.
CA-xxx-xx Prior to applying wastewater at site	For sites that have existing ground water quality that exceeds standards as a result of land application activities, a Water Quality Improvement Plan (WQIP) may be required.
CA-xxx-xx Prior to applying wastewater at site	Submit to the Department for review and approval, a well location acceptability analysis, as outlined in the <i>Guidance for Land Application of Municipal and Industrial Wastewater</i> , Section 6.6.3.1 for all applicable wells located around or on the land application site.
CA-xxx-xx Prior to application of waste solids	Submit a Waste Solids Management Plan to DEQ for review and approval. The Plan shall describe how waste solids generated at the facility will be handled and disposed of to meet the requirements of section I, No. 5.

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E. Compliance Schedule for Required Activities

Compliance Activity Number Completion Date	Compliance Activity Description
CA-xxx-xx Prior to applying wastewater at site	Submit a scaled site map delineating buffer zones, homes, public access areas, private wells, canals, etc. and the actual area in acres of each HMTU. Site Maps shall be supplied by the permittee and shall include at a minimum all requirements of IDAPA 58.01.17.300.05.e through f.
CA-xxx-xx Prior to applying wastewater at site	Submit plans and specifications for ground water monitoring network for DEQ review and approval, including at least one (1) upgradient well and two (2) downgradient wells.
CA-xxx-xx Prior to applying wastewater at site	For Forest / Tree sites, Permittee shall submit Silviculture Plan to DEQ within 12 months of permit start date.
CA-xxx-xx Within one year of permit renewal	Update O & M Manual, Site Maps etc.

(Add other optional requirements for grazing plans, and seepage testing here in compliance activities to further describe particular requirements for each site.)

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F. Permit Limits and Conditions

- 1) The Permittee is allowed to apply wastewater and treat it on a land application site as prescribed in the tables below and in accordance with all other applicable permit conditions and schedules.

Category	Permitted Limits and Conditions																
Type of Wastewater	Municipal Wastewater																
Application Site Area																	
Application Season																	
Growing Season (GS)	Site Specific – see definitions, abbreviations																
Non-Growing Season (NGS)	Site Specific – see definitions, abbreviations																
Certified Operator	Required. See IDAPA 58.01.02.406																
Reporting Year for Annual Loading Rates	Site Specific Dates Comment: It should always be consecutive NGS and GS periods.																
Maximum Hydraulic Loading Rate, Growing Season (includes wastewater and supplemental irrigation water, if used)	<p>Growing Season (GS) Hydraulic Loading Rate shall be no greater than the Irrigation Water Requirement (IWR) using data from the tables of the following University Of Idaho web site: http://www.kimberly.uidaho.edu/water/appndxet/index.shtml. IWR is equal to the Mean IR data from these tables divided by the irrigation system efficiency.</p> <p>In lieu of these tables, current climatic and evaporation data, or 30-year average data may be used to calculate the IWR, as defined in the 1994 Technical Interpretive Supplement, pages IV-6 and IV-7. Assume no carryover soil moisture and a leaching rate of zero in calculating the IWR. Application shall generally follow consumptive use rates for the crop throughout the season.</p>																
Maximum Hydraulic Loading Rate, Non-Growing Season	<p>Soil AWC – Precipitation_{NGS} + Evapotranspiration_{NGS} for each hydraulic management unit (HMU). Include the allowable amount in inches and MG for each HMU in this section based on this equation.</p> <table><tr><th>HMU #</th><th>Field Description</th><th>Million Gallons</th><th>Inches</th></tr><tr><td>1</td><td>Pivots 1 and 2</td><td>x.xx</td><td>x.xx</td></tr><tr><td>2</td><td>Pivot 3</td><td>x.xx</td><td>x.xx</td></tr><tr><td colspan="4">etc....</td></tr></table>	HMU #	Field Description	Million Gallons	Inches	1	Pivots 1 and 2	x.xx	x.xx	2	Pivot 3	x.xx	x.xx	etc....			
HMU #	Field Description	Million Gallons	Inches														
1	Pivots 1 and 2	x.xx	x.xx														
2	Pivot 3	x.xx	x.xx														
etc....																	
No Runoff	<p>_____ shall prepare and submit to DEQ for approval a runoff management plan with control structures and other BMPs (e.g. collection basins, berms, etc.) designed to prevent runoff from any site or fields used for wastewater land application to property not owned by _____ except in the event of a 25-year, 24-hour storm event or greater, using Western Regional Climate Center (WRCC) Precipitation Frequency Map, Figure 28 'Isopluvials of 25-YR, 24-HR Precipitation'. For this site, the 25-year, 24-hour event is _____ inches. Upon approval of the plan by DEQ, _____ shall implement the runoff management plan, and shall construct, operate, and maintain the control structures and other BMPs in accordance with the plan.</p>																
Ground Water Quality	Ground Water Quality shall be in compliance with <i>Idaho Ground Water Quality Rule</i> IDAPA 58.01.11																

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F. Permit Limits and Conditions

Category	Permitted Limits and Conditions
Maximum COD Loading, seasonal average in Pounds / acre-day, each HMU	50 pounds/acre-day seasonal average for growing season. 25 pounds/acre-day seasonal average for non-growing season.
Maximum Nitrogen Loading Rate, pounds / acre-year, each HMU (from all sources including waste solids and supplemental fertilizers).	150% of typical crop uptake (see definition), or UI Fertility Guide
Maximum Phosphorus Loading Rate, pounds / acre-year, each HMU (from all sources including waste solids and supplemental fertilizers).	None. DEQ reserves the right to re-open this permit for inclusion of phosphorus limits.
Construction Plans	Prior to construction or modification of all wastewater facilities associated with the land application system or expansion, detailed plans and specifications shall be reviewed and approved by DEQ. Within 30 days of completion of construction, the permittee shall submit as-built plans for review and approval.
Grazing	A grazing management plan shall be submitted to DEQ for review and approval prior to any grazing activities. Grazing Plans shall follow the guidance located on the DEQ Internet site.
Allowable crops	Crops grown for direct human consumption (those crops that are not processed prior to consumption) are not allowed.
Fencing and Posting	Signs shall be posted every 500 feet designating the fields as wastewater reuse areas or equivalent – see WLAP Guidance.
Supplemental Irrigation Water Protection	For systems with wastewater and fresh irrigation water interconnections, DEQ approved backflow prevention devices are required.
Odor Management	The wastewater treatment plant, land application facilities, and other operations associated with the facility shall not create a public health hazard or nuisance conditions, including odors. These facilities shall be managed in accordance with a

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F. Permit Limits and Conditions

Category	Permitted Limits and Conditions
	DEQ approved Odor Management Plan.

Buffer Zone Distances (based on sprinkler irrigation)	Disinfection Level* (total coliform)	Distance to Public Access	Distances to Inhabited Dwellings	Distance to streams	Distance to private water sources	Distance to public water sources	Single sample maximum total coliform level
	2.2 /100 ml	0 feet	100 feet	100 feet	500	1000	23/100 ml
	23/100 ml	50 feet	300 feet	100 feet	500	1000	240/100ml
	230/100ml	300 feet	1,000 feet	100 feet	500	1000	2400/100ml

*Compliance determination method for disinfection requirements is as follows:

- For determining compliance with the 2.2 / 100 ml disinfection level, the median value of the last five (5) results must not exceed 2.2 / 100 ml. In addition, no single sample value shall exceed 23 / 100 ml.
- For determining compliance with the 23 / 100 ml disinfection level, the median value of the last five (5) results must not exceed 23 / 100 ml. In addition, no single sample value shall exceed 240 / 100 ml.
- For determining compliance with the 230 / 100 ml disinfection level, the median value of the last three (3) results must not exceed 230 / 100 ml. In addition, no single sample value shall exceed 2400 / 100 ml.

(Also see Guidance for additional requirements for Buffer Zones – Public Exposure and Buffer Zones – Well Head Protection.)

The following are possible Permit Limits and Conditions that would be chosen depending on the particular permit is question. Many other options are available as the permit writer sees necessary.

1. No wastewater land application is allowed when depth to ground water is 36 inches or less as measured by on-site piezometers.
2. Specific total coliform limit and associated buffer zones.
3. More defined Hydraulic Loading Requirement. In the Cd'A permits, we calculated the monthly IWR in inches and MG, and put those in the permit.
4. Discussion of weekly or monthly limits on hydraulic loading.

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F. Permit Limits and Conditions

5. Other applicable issues.

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G. Monitoring Requirements

- 1) Appropriate analytical methods, as given in the *Guidance for Land Application of Municipal and Industrial Wastewater* or as approved by the Idaho Department of Environmental Quality (hereinafter referred to as DEQ), shall be employed. A description of approved sample collection methods, appropriate analytical methods and companion QA/QC protocol shall be included in the Operation and Maintenance Manual.
- 2) The permittee shall monitor and measure parameters and submit information as stated in the Facility Monitoring Table in this section.
- 3) Samples shall be collected at times and locations that represent typical environmental and process parameters being monitored.
- 4) Monitoring locations are described in Appendix 1. Environmental Monitoring Serial Numbers.
- 5) Monitoring is required at the frequency shown in the table below if wastewater is applied anytime during the time period shown. Unless otherwise agreed in writing by the DEQ, data collected and submitted shall include, but not be limited to, the parameters and frequencies in the Facility Monitoring Table as follows.
- 6) If the soil management unit is less than 15 acres, use 5 sub-samples. If the soil management unit is greater than 15 acres, use 10 sub-samples.
- 7) Three (3) soil samples shall be collected at each sample location, one at 0-12 inches, one at 12-24 inches, and one at 24-36 inches. The soil samples collected at 0-12 inches from each sample location shall be composited. Similarly, all soil samples collected at 12-24 inches shall be composited and all soil samples collected at 24-36 inches shall be composited. This method will yield three samples for analysis, one for 0-12 inches, one for 12-24 inches and one for 24-36 inches for each soil management unit.
- 8) Ground Water Monitoring Procedure: Ground Water Monitoring Wells shall be purged a minimum of three casing volumes and/or until field measurements for pH, specific conductance and temperature meet the following conditions: two successive temperature values measured at least five minutes apart are within one degree Celsius of each other, pH values for two successive measurements measured at least five minutes apart are within 0.2 units of each other, and two successive specific conductance values measured at least five minutes apart are within 10% of each other. This procedure will determine when the wells are suitable for sampling for constituents required by the permit. Other procedures, such as low flow sampling, may be considered by DEQ for approval. The static water level shall be measured prior to pumping or sampling for ground water.
- 9) Annual reporting of monitoring requirements is described in Section H, Standard Reporting Requirements.
- 10) Surface water sampling guidance: DEQ to review and approve methods, timing and locations for sampling prior to initial sampling event.

Facility Monitoring Table

Frequency	Monitoring Point	Description and Type of Monitoring	Parameters
Daily (when land applying)	Discharge Point of Wastewater to Land Application (Flow Meter)	Volume of Wastewater land applied	Gallons/Month and acre-inches/month applied to each Hydraulic Management Unit
Monthly (when land applying)	Discharge Point of Wastewater to Land Application	grab sample	Total Kjeldahl nitrogen, nitrate+nitrite-nitrogen, TDS, pH, COD, total phosphorus
Daily (when land applying)	Flow Meter or Calibrated Pump Rate	Supplemental Irrigation Water	Gallons/Month and acre-inches/month applied to each Hydraulic Management Unit
Annually	Supplemental Irrigation Water	Grab Sample	Total Kjeldahl nitrogen, nitrate+nitrite-nitrogen, TDS,

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G. Monitoring Requirements

Frequency	Monitoring Point	Description and Type of Monitoring	Parameters
	at diversions		pH, COD, total phosphorus
During Application Season For total coliform, monitoring frequency depends on level of treatment. 1. 2.2 / 100 mL - Twice Weekly 2. 23 / 100 mL - Weekly 3. 230 / 100 mL - Twice Monthly	Discharge Point of Wastewater to Land Application	grab sample	Total Coliform
Annually	Hydraulic management unit	Acres used for land application	Acres
Annually	Hydraulic management unit	COD loading calculation (GS and NGS)	COD applied in lbs/acre-day
Annually	Hydraulic management unit	Report total nitrogen and phosphorus load from fertilizer or all other non-wastewater application.	Nitrogen and phosphorus applied in lbs/acre-year
Annually	Hydraulic management unit	Calculate and Report total nitrogen and phosphorus loading calculation from wastewater	Nitrogen and phosphorus applied in lbs/acre-year
Annually	Hydraulic management unit	Crop Yield Calculation and Crop Type	tons/acre, lbs/acre, or bushels/acre
Annually	Soil Monitoring unit	Composite soil sample	Electrical Conductivity, nitrate-N, ammonium-N, pH, Plant available phosphorous – (use Olsen method for soils with pH 6.5 or greater, use Bray method if soil pH is less than 6.5)
First year of permit only	Soil Monitoring unit	Composite soil sample	SAR, DTPA-FE, DTPA-Mn
Annually	Hydraulic management unit	Crop Nutrient Uptake from Crop Tissue Analysis or from standard tables for Crop Type and yield.	Nitrogen and phosphorus uptake in lbs/acre-year

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G. Monitoring Requirements

Frequency	Monitoring Point	Description and Type of Monitoring	Parameters
Annually	Hydraulic management unit	Calculate Irrigation Water Requirement for Crop Grown	Volume (inches / acre and total gallons) for each month for GS.
Annually	All flow measurement locations.	Flow measurement calibration of all flows to land application.	Document the flow measurement calibration of all flow meters and pumps used directly or indirectly measure all wastewater, tail water, flushing water, and supplemental irrigation water flows applied to each HMU.
Annually	All supplemental irrigation pumps directly connected to the wastewater distribution system.	Backflow testing	Document the testing of all backflow prevention devices for all supplemental irrigation pumps directly connected to the wastewater distribution system(s). Report the testing date(s) and results of the test (pass or fail). If any test failed, report the date of repair or replacement of backflow prevention device, and if the repaired/replaced device is operating correctly.
April of first and last permit years only.	Groundwater Monitoring Wells listed in Appendix I.	Grab sample of groundwater (See Note 8).	Sodium, Potassium, Calcium, Magnesium, carbonate, bicarbonate.

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G. Monitoring Requirements

Frequency	Monitoring Point	Description and Type of Monitoring	Parameters
April of first and last permit years only.	Domestic and municipal wells within ¼ mile of all land application acreage.	Grab sample from domestic and municipal wells (with well owner's permission. See note 8).	Specific Conductivity, Total Dissolved Solids (TDS), Nitrite + Nitrate Nitrogen, Total Phosphorus, Chloride, Sulfate, Total Iron, Total Manganese, Sodium, Potassium, Calcium, Magnesium, carbonate, bicarbonate, Dissolved Iron ¹ , Dissolved Manganese ¹
Annually	Each HMU	Calculate crop nitrogen, phosphorous, and ash removal	Pounds/acre and total pounds per HMU (dry basis)
Annually	Each HMU	Calculate NGS wastewater loading rate	Million gallons & Inches/NGS
Annually	Each HMU	Calculate GS wastewater loading rate	Million gallons & Inches/GS
Twice per year (May and Oct)	Nearest Surface Water – DEQ shall review and approve locations prior to initial sampling event.	Grab samples of surface water upstream and downstream from land application site.	Nitrate + Nitrite Nitrogen, Total Phosphorous, Ortho Phosphorus, Total Dissolved Solids, Volatile Dissolved Solids, Chemical Oxygen Demand, Total Kjeldahl Nitrogen
Daily during NGS if land applying.	Meteorological data and field conditions, each HMU	Temperature, Precipitation, and field conditions.	High and low air temperatures and precipitation during each 24-hour period. Field conditions observations for areas of ponding, etc.
Note: Review permit strategy and policy for phosphorous with program office	Surface water upstream and downstream of site	For sites that apply high levels of phosphorous (for example, twice crop uptake or more) and ground water discharges to nearby surface water.	Total Phosphorous, Ortho Phosphorous, Electrical Conductivity

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G. Monitoring Requirements

1. Analytical results are required for dissolved iron and / or manganese only if the results for total iron and / or manganese exceed the standards in IDAPA 58.01.11.200.01.b.

The following are possible Monitoring Requirements that would be chosen depending on the particular permit is question. Many other options are available as the permit writer sees necessary.

1. For sites requiring groundwater monitoring, a minimum of quarterly grab samples at each of the up-gradient and down-gradient monitoring points will be required.
2. For sites requiring groundwater monitoring, twice annual (April and October) grab samples for Chloride, Nitrate-N, Nitrite-N, TDS, static water level, total iron, total manganese, and pH will be required. Note: If the MCL for total iron and manganese are exceeded, sample the well for dissolved iron and manganese. (include total coliform for systems with shallow ground water).
3. The heavy metals are not necessary unless there is a known industrial contributor. The nitrate, TDS, chloride, iron and manganese are included above.
4. For sites requiring groundwater monitoring, if the monitoring system is appropriate (as determined by staff hydrogeologist), soil sampling frequency may be reduced to the first and last years of the permit.
5. Coliform sampling frequency and other protocol for filtered systems with coliform limit of 2.2 / 100 ml.
6. If the nitrogen loading for the reporting year is 75% or less than the nitrogen permit limit, the permittee may reduce wastewater monitoring to twice per year in July and September for the following reporting year and beyond if the loading rates continues below 75%.
7. Recommendation that operators monitor TSS and BOD of both influent and effluent. This is not a requirement. However, operators can put this additional monitoring into their Operation and Maintenance Manual and use the data as an indicator of treatment performance.
8. Reduction in ground water monitoring if justified by historical data.
9. Eliminate COD wastewater monitoring requirements if historical loading rates are 5 pounds/acre-day or less.

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H. Standard Reporting Requirements

1. The permittee shall submit an Annual Wastewater-Land Application Site Performance Report ("Annual Report") prepared by a competent environmental professional no later than January 31 of each year which shall cover the previous year (see section F for WLAP reporting period). The Annual Report shall include results for monitoring required in Section G, status of compliance activities, and an interpretive discussion of monitoring data (ground water, vadose zone, hydraulic loading, wastewater etc.) with particular respect to environmental impacts by the facility.
2. The annual report shall contain the results of the required monitoring as described in Section G, Monitoring Requirements. If the permittee monitors any parameter more frequently than required by this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the annual report.
3. The annual report shall be submitted to the Engineering Manager in the applicable Regional DEQ Office.

Boise Regional Office
1445 N. Orchard
Boise, ID 83706-2239
208-373-550

Coeur d'Alene Regional Office
2110 Ironwood Parkway
Coeur d'Alene, ID 83814
208-769-1422

Idaho Falls Regional Office
900 N. Skyline, Suite B
Idaho Falls, ID 83402
208-528-2650

Lewiston Regional Office
1118 "F" Street
Lewiston, ID 83501
208-799-4370

Pocatello Regional Office
444 Hospital Way, #300
Pocatello, ID 83201
208-236-6160

Twin Falls Regional Office
601 Pole Line Road, Suite 2
Twin Falls, ID 83301
208-736-2190

A copy of the annual report shall also be mailed to:

Richard Huddleston, P.E.
Wastewater Program Manager
1410 N. Hilton
Boise, ID 83706
208-373-0561

4. Notice of completion of any work described in Section E, Compliance Schedule for Required Activities shall be submitted to the Department within 30 days of activity completion. The status of all other work described in Section E shall be submitted with the Annual Report.
5. All laboratory reports containing the sample results for monitoring required by Section G, Monitoring Requirements of this permit shall be submitted with the Annual Report.

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I. Standard Permit Conditions: Procedures and Reporting

1. The permittee shall at all times properly maintain and operate all structures, systems, and equipment for treatment, operational controls and monitoring, which are installed or used by the permittee to comply with all conditions of the permit or the Wastewater-Land Application Permit Regulations, in conformance with a DEQ approved, current Plan of Operations (Operations and Maintenance Manual) which describes in detail the operation, maintenance, and management of the wastewater treatment system. This Plan of Operations shall be updated as necessary to reflect current operations.
2. Wastewater(s) or recharge waters applied to the land surface must be restricted to the premises of the application site unless permission has been obtained from the DEQ authorizing a discharge into the waters of the State as stated in IDAPA 58.01.02.600.02.
3. Wastewater must not create a public health hazard or nuisance condition as stated in IDAPA 58.01.02.600.03. In order to prevent public health hazards and nuisance conditions the permittee shall:
 - a. Apply wastewater as evenly as practicable to the treatment area;
 - b. Prevent organic solids (contained in the wastewater) from accumulating on the ground surface to the point where the solids putrefy or support vectors or insects; and
 - c. Prevent wastewater from ponding in the fields to the point where the ponded wastewater putrefies or supports vectors or insects.
4. The permittee shall:
 - a. Manage the wastewater land application treatment site as an agronomic operation where vegetative cover is grown and harvested or grazed to utilize the nutrients and minerals in the wastewater, and,
 - b. Not hydraulically overload any particular areas of the wastewater land application treatment site.
5. All waste solids, including dredgings and sludges, shall be utilized or disposed in a manner which will prevent their entry, or the entry of contaminated drainage or leachate therefrom, into the waters of the state such that health hazards and nuisance conditions are not created; and to prevent impacts on designated beneficial uses of the ground water and surface water. The permittee's management of waste solids shall be governed by the terms of the DEQ approved Waste Solids Management Plan, which upon approval shall be an enforceable portion of this permit.
6. If the permittee intends to continue operation of the permitted facility after the expiration of an existing permit, the permittee shall apply for a new permit at least six months prior to the expiration date of the existing permit in accordance with the Waste Water Land Application Permit Regulations and include seepage tests on all lagoons per latest DEQ procedures.
7. The permittee shall allow the Director of the Idaho Department of Environmental Quality or the Director's designee (hereinafter referred to as Director), consistent with Title 39, Chapter 1, Idaho Code, to:
 - a. Enter the permitted facility,
 - b. Inspect any records that must be kept under the conditions of the permit,
 - c. Inspect any facility, equipment, practice, or operation permitted or required by the permit,
 - d. Sample or monitor for the purpose of assuring permit compliance, any substance or any parameter at the facility.
8. The permittee shall report to the Director under the circumstances and in the manner specified in this section:
 - a. In writing thirty (30) days before any planned physical alteration or addition to the permitted facility or activity if that alteration or addition would result in any significant change in information that was submitted during the permit application process.
 - b. In writing thirty (30) days before any anticipated change which would result in non-compliance with any permit condition or these regulations.
 - c. Orally within twenty-four (24) hours from the time the permittee became aware of any non-compliance which may endanger the public health or the environment at telephone numbers provided in the permit by the Director (see below)

DEQ Regional Office: see Permit Certification Page
Emergency 24 Hour Number 1-800-632-8000

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I. Standard Permit Conditions: Procedures and Reporting

- d. In writing as soon as possible but within five (5) days of the date the permittee knows or should know of any non-compliance unless extended by the DEQ. This report shall contain:
 - i. A description of the non-compliance and its cause;
 - ii. The period of non-compliance including to the extent possible, times and dates and, if the non-compliance has not been corrected, the anticipated time it is expected to continue; and
 - iii. Steps taken or planned to reduce or eliminate reoccurrence of the non-compliance.
- e. In writing as soon as possible after the permittee becomes aware of relevant facts not submitted or incorrect information submitted, in a permit application or any report to the Director. Those facts or the correct information shall be included as a part of this report.
- 9. The permittee shall take all necessary actions to prevent or eliminate any adverse impact on the public health or the environment resulting from permit noncompliance.
- 10. The permittee shall determine (on an on-going basis) if any noxious weed problems relate to the permitted sites. If problems are present, coordinate with the Idaho Department of Agriculture or the local County authority regarding their requirements for noxious weed control. Also address these control operations in an update to the Operations and Maintenance Manual.

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J. Standard Permit Conditions: Modifications, Violations, and Revocations

1. The permittee shall furnish to the Director within reasonable time, any information including copies of records, which may be requested by the Director to determine whether cause exists for modifying, revoking, re-issuing, or terminating the permit, or to determine compliance with the permit or these regulations.
2. Both minor and major modifications may be made to this permit as stated in IDAPA 58.01.17.700.01 and 02 with respect to any conditions stated in this permit upon review and approval of the DEQ.
3. Whenever a facility expansion, production increase or process modification is anticipated which will result in a change in the character of pollutants to be discharged or which will result in a new or increased discharge that will exceed the conditions of this permit, or if it is determined by the DEQ that the terms or conditions of the permit must be modified in order to adequately protect the public health or environment, a request for either major or minor modifications must be submitted together with the reports as described in I. *Standard Reporting Requirements*, and plans and specifications for the proposed changes. No such facility expansion, production increase or process modification shall be made until plans have been reviewed and approved by the DEQ and a new permit or permit modification has been issued.
4. Permits shall be transferable to a new owner or operator provided that the permittee notifies the Director by requesting a minor modification of the permit before the date of transfer.
5. Any person violating any provision of the Waste Water Land Application Permit Regulations, or any permit or order issued thereunder shall be liable for a civil penalty not to exceed ten thousand dollars (\$10,000) or one thousand dollars (\$1,000) for each day of a continuing violation, whichever is greater. In addition, pursuant to Title 39, Chapter 1, Idaho Code, any willful or negligent violation may constitute a misdemeanor.
6. The Director may revoke a permit if the permittee violates any permit condition or the Wastewater Land Application Permit Regulations.
7. Except in cases of emergency, the Director shall issue a written notice of intent to revoke to the permittee prior to final revocation. Revocation shall become final within thirty-five (35) days of receipt of the notice by the permittee, unless within that time the permittee request an administrative hearing in writing to the Board of the Department of Environmental Quality pursuant to the Rules of Administrative Procedures contained in IDAPA 58.01.23.
8. If, pursuant to Idaho Code § 67-5247, the Director finds the public health, safety or welfare requires emergency action, the Director shall incorporate findings in support of such action in a written notice of emergency revocation issued to the permittee. Emergency revocation shall be effective upon receipt by the permittee. Thereafter, if requested by the permittee in writing, a revocation hearing before the Board of the Department of Environmental Quality shall be provided. Such hearings shall be conducted in accordance with the Rules of Administrative Procedures contained in IDAPA 58.01.23.
9. The provisions of this permit are severable and if a provision or its application is declared invalid or unenforceable for any reason, that declaration will not affect the validity or enforceability of the remaining provisions.
10. The permittee shall notify the DEQ at least six (6) months prior to permanently removing any permitted land application facility from service, including any treatment, storage, or other facilities or equipment associated with the land application site. Prior to commencing closure activities, the permittee shall: a) participate in a pre-site closure meeting with the DEQ; b) develop a site closure plan that identifies specific closure, site characterization, or cleanup tasks with scheduled task completion dates in accordance with agreements made at the pre-site closure meeting; and c) submit the completed site closure plan to the DEQ for review and approval within forty-five (45) days of the pre-site closure meeting. The permittee must complete the DEQ approved site closure plan.

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Appendix 1
Environmental Monitoring Serial Numbers

HYDRAULIC MANAGEMENT UNITS

Serial Number	Description	Acres
MU-xxxxxx		
MU-xxxxxx		
MU-xxxxxx		
MU-xxxxxx		

WASTEWATER SAMPLING POINTS

Serial Number	Description
WW-xxxxxx	
WW-xxxxxx	

SURFACE WATER SAMPLING POINTS

Serial Number	Description
SW-xxxxxx	
SW-xxxxxx	

PEIZOMETERS

Serial Number	Description
SW-xxxxxx	
SW-xxxxxx	

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Appendix 1
Environmental Monitoring Serial Numbers
SOIL MONITORING UNITS

Serial Number	Description	Associated MU
SU-xxxxxx		
SU-xxxxxx		
SU-xxxxxx		
SU-xxxxxx		

GROUND WATER MONITORING

Serial Number	Description (private, irrigation, dedicated monitoring)	Location
GW-xxxxxx		
GW-xxxxxx		
GW-xxxxxx		

LAGOONS

Serial Number	Description
LG-xxxxxx	Lagoon no. 1
LG-xxxxxx	Lagoon no. 2

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Appendix 2
Site Maps

Site Maps shall be supplied by the permittee and shall include at a minimum all requirements of IDAPA 58.01.17.300.05.e through f.

Site Map No. 1

Attach map showing general locations (property boundaries) of municipal plant and WLAP site. Include Township(s), Range(s), Section(s).

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Appendix 2

Site Maps

Site Map No. 2

Attach detailed map that shows the following:

- All Hydraulic Management Units. Include MU serial #'s
- All Soil Monitoring Units. Include SU serial #'s
- All lagoons/storage ponds. Include serial #'s
- All Wastewater and Supplemental Irrigation distribution systems for the WLAP site including sumps, pipelines, ditches, irrigation diversions, irrigation systems (pivots, wheel lines, etc.), tailwater collection systems, and any other item of relevance.

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Appendix 2
Site Maps

Site Map No. 3

Attach detailed map showing location of:

- All monitoring wells used for permit compliance (may include domestic wells if used for groundwater monitoring compliance).
- All public and private drinking water supply sources within ¼ mile of WLAP site.
- All springs, wetlands, and surface waters within ¼ mile of WLAP site.
- Groundwater contours & direction of flow (include additional map(s) if flow direction changes seasonally)

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Appendix 2

Site Maps

Site Map No. 4

Attach map showing location of:

- All dwellings within $\frac{1}{4}$ mile of WLAP site.
- All public and private gathering places within $\frac{1}{4}$ mile of WLAP site
- All public roads within $\frac{1}{4}$ mile of WLAP site

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A.11.3 Standard Industrial Permits

**User's Guide
for the
Standard Industrial Wastewater-Land Application Permit Template**

**01/05/04
Introduction**

The Standard Industrial Wastewater-Land Application Permit Template is a guidance document for writing industrial WLAP permits. There may be permit specific issues that are not addressed in this template or parts of the template that may not be applicable to the site you are permitting. The template serves to provide for consistent permit limits and language where appropriate.

The template includes a new section for abbreviations/acronyms and the layout has been rearranged to put permit specific information at the beginning and standard limits, requirements, and conditions towards the end of the permit.

The language that appears in yellow highlight is optional and inclusion in the permit needs to be evaluated on a case-by-case basis by the permit writer.

The Wastewater Program Office, as time permits, will update this template. If you have suggestions for modifying the template, please contact Mark Mason at (208) 373-0266.

Section E. Compliance Schedule for Required Activities

Plan of Operation – Inclusion of this compliance activity will depend on the status of the Plan of Operation at the time of permitting. If an existing facility has an adequate Plan of Operation, this is obviously not necessary. For new facilities or re-permits involving significant modifications, this requirement may be appropriate.

Nuisance Odor Management Plan – Preference would be to have the applicant submit this plan with permit application materials, especially for new systems or if there is significant public interest.

TDIS Management Plan – If ground water modeling indicates significant TDS impacts to ground water, this compliance activity should be included.

Water Quality Improvement Plan (WQIP) – For sites that have existing ground water quality that exceeds the limits in the *Ground Water Quality Rule* (IDAPA 58.01.11) for primary or secondary standards as a result of land application activities, a WQIP may be required. The WQIP requires mapping areas where ground water has been impacted. For areas where ground water quality standards are exceeded, a plan to improve ground water quality, with the objective of attaining standards is required. For areas where ground water quality is degraded, but ground water quality standards are not exceeded, best management practices or other measures described in the GWQR, section 58.01.11.400.02 shall be developed and implemented. For example language, consult with the Wastewater Program Office.

Waste Solids Management Plan – Site specific.

Buffer Zone Plan – The applicant should provide this information as part of the permit application materials. However, for new sites that are in design, this compliance activity may be required. Facilities may be developing plans for the WLAP irrigation system during the same timeframe as the draft permit

Ground Water Monitoring Plan – Site specific. Typically required for new facilities where it is determined ground water monitoring is necessary. May also be required for re-permitting sites in which the existing network is inadequate.

Section F. Permit Limits and Conditions

Supervision – Requiring supervision of the wastewater treatment system is optional. Poor past management or complex wastewater pretreatment systems prior to land application are considerations. Also helpful for simple systems where operator is not technically proficient.

Section G. Monitoring Requirements

Composite Sampling - Dependent on wastewater system. For systems with wastewater quality that is variable within a 24-hour period, the system should provide composite samples. For systems that quality does not vary significantly on a daily basis, grab samples are appropriate.

Bacterial Sampling - May be required for cheese processors, meat processors, or others in which there is documented evidence of human pathogens present. Also dependent on irrigation delivery method which may cause exposure.

Appendix 1. Environmental Monitoring Serial Numbers

Instructions for serial number assignment. Serial Numbers for monitoring points are formatted as follows. XX-xxxxxx. The upper case XX signifies the type of point (MU, WW, SW...). This is followed by a hyphen. The first four lower case x's signify the last four numbers of the permit, excluding the suffix. The last two lower case x's signify the actual point location. If the permit area expands over the life of the project, the point location numbers are just continued and expanded as necessary. No allowance is necessary for suffixes or new expansion area designation.

A. Permit Certificate

**INDUSTRIAL
WASTEWATER-LAND APPLICATION PERMIT
LA-000xxx-0x**

Facility Name, LOCATED AT Street address, city, ID xxxxx-xxxx

AND IN Township(s) xx, Range(s) xx, Section(s) xx IS HEREBY

AUTHORIZED TO CONSTRUCT, INSTALL, AND OPERATE A
WASTEWATER-LAND APPLICATION TREATMENT SYSTEM IN
ACCORDANCE WITH THE WASTEWATER-LAND APPLICATION
RULES (IDAPA 58.01.17), THE WATER QUALITY STANDARDS
AND WASTEWATER TREATMENT REQUIREMENTS (IDAPA
58.01.02), THE GROUND WATER QUALITY RULE (IDAPA 58.01.11),
AND ACCOMPANYING PERMIT, APPENDICES, AND REFERENCE
DOCUMENTS. THIS PERMIT IS EFFECTIVE FROM THE DATE OF
SIGNATURE AND EXPIRES ON **(60 months from issue date)**.

Name of RO Administrator
Title i.e. (REGION) Regional Administrator
Idaho Department of Environmental Quality

Date:

DEPARTMENT OF ENVIRONMENTAL QUALITY
Regional Office Address
Regional Office Phone No.

POSTING ON SITE RECOMMENDED

B. Permit Contents, Appendices, and Reference Documents

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A. Permit Certificate	8
B. Permit Contents, Appendices and Attachments	8
C. Abbreviations, Definitions	8
D. Facility Information	8
E. Compliance Schedule for Required Activities	8
F. Permit Limits and Conditions	8
G. Monitoring Requirements	8
H. Standard Reporting Requirements	8
I. Standard Permit Conditions: Procedures and Reporting	8
J. Standard Permit Conditions: Modifications, Violation, and Revocation	8

Appendices

1. Environmental Monitoring Serial Numbers
2. Site Maps

References

1. Plan of Operation (Operation and Maintenance Manual)
 - Nuisance Odor Management Plan
 - Waste Solids Management Plan
 - Etc. – see checklist in Handbook

The Sections, Appendices, and Reference Documents listed on this page are all elements of Wastewater-Land Application Permit LA-000xxx-0x and are enforceable as such. This permit does not relieve Company Name, hereafter referred to as the permittee, from responsibility for compliance with other applicable federal, state or local laws, rules, standards or ordinances.

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C. Abbreviations, Definitions

Comment: Items throughout template that are highlighted in yellow are options for considerations and additional thought as to application to a particular permit. Those items may be included, modified or deleted.

Ac-in	Acre-inch. The volume of water or wastewater to cover 1 acre of land to a depth of 1 inch. Equal to 27,154 gallons
BMP or BMPs	Best Management Practices
COD	Chemical Oxygen Demand
DEQ or the Department	Idaho Department of Environmental Quality
Director	Director of the Idaho Department of Environmental Quality, or the Directors Designee, i.e. Regional Administrator
ET	Evapotranspiration – Loss of water from the soil and vegetation by evaporation and by plant uptake (transpiration)
GS	Growing Season – Typically April 01 through October 31 (214 days)
GW	Ground Water
GWQR	IDAPA 58.01.11 “Ground Water Quality Rule”
Handbook or Guidelines	Handbook for Land Application of Municipal and Industrial Wastewater, DEQ, April 1996.
HLRgs	Growing Season Hydraulic Loading Rate. Includes any combination of wastewater and supplemental irrigation water applied to land application hydraulic management units during the growing season. The HLRgs limit is specified in Section F. Permit Limits and Conditions.
HLRngs	Non-Growing Season Hydraulic Loading Rate. Includes any combination of wastewater and supplemental irrigation water applied to each hydraulic management unit during the non-growing season. The HLRngs limit is specified in Section F. Permit Limits and Conditions.
HMU	Hydraulic Management Unit (Serial Number designation is MU)
IWR	<p>Irrigation Water Requirement – Any combination of wastewater and supplemental irrigation water applied at rates commensurate to the moisture requirements of the crop, and calculated monthly during the growing season (GS). Calculation methodology for the IWR can be found at the following website: http://www.kimberly.uidaho.edu/water/appndset/index.shtml. The equation used to calculate the IWR at this website is:</p> $IWR = (CU - P_e) / E_i$ <p>CU is the monthly consumptive use for a given crop in a given climatic area. CU is synonymous with crop evapotranspiration</p> <p>P_e is the effective precipitation. CU minus P_e is synonymous with the net irrigation requirement (IR)</p> <p>E_i is the irrigation system efficiency. To obtain the gross irrigation water requirement (IWR), divide the IR by the irrigation system efficiency.</p>
IDAPA	Idaho Administrative Procedures Act.
LG	Lagoon
lb/ac-day	Pounds (of constituent) per acre per day
MG	Million Gallons (1 MG = 36,827 acre-inches)
MGA	Million Gallons Annually (per WLAP Reporting Year)
NGS	Non-Growing Season – Typically November 01 through March 31 (151 days)
NVDS	Non-Volatile Dissolved Solids (= Total Dissolved Solids less Volatile Dissolved Solids)
O&M manual	Operation and Maintenance Manual, also referred to as the Plan of Operation
SAR	Sodium Absorption Ratio

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C. Abbreviations, Definitions

SI	Supplemental Irrigation water applied to the land application treatment site.
Soil AWC	Soil Available Water Holding Capacity - the water storage capability of a soil to a depth at which plant roots will utilize (typically 60 inches or root limiting layer)
SMU	Soil Monitoring Unit (Serial Number designation is SU)
SW	Surface Water
TDS	Total Dissolved Solids or Total Filterable Residue
TDIS	Total Dissolved Inorganic Solids - The summation of chemical concentration results in mg/L for the following common ions: calcium, magnesium, potassium, sodium, chloride, sulfate, and 0.6 times alkalinity (alkalinity expressed as calcium carbonate). Nitrate, Silica and fluoride shall be included if present in significant quantities (i.e. > 5 mg/L each).
TMDL	Total Maximum Daily Load - The sum of the individual waste-load allocations (WLA's) for point sources, Load Allocations (LA's) for non-point sources, and natural background. Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. IDAPA 58.01.02 <i>Water Quality Standards and Wastewater Treatment Requirements</i>
Typical Crop Uptake	Typical Crop Uptake is defined as the median constituent crop uptake from the three (3) most recent years the crop has been grown. Typical Crop Uptake is determined for each hydraulic management unit. For new crops having less than three years of on-site crop uptake data, regional crop yield data and typical nutrient content values, or other values approved by DEQ may be used.
USGS	United States Geological Survey
WLAP	Wastewater Land Application Permit (or Program)
WLAP Reporting Year	The reporting year begins with the non-growing season and extends through the growing season of the following year, typically November 01 - October 31. For example, the 2000 Reporting Year was November 01, 1999 through October 31, 2000.
WW	Wastewater applied to the land application treatment site

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D. Facility Information

Legal Name of Permittee	
Type of Wastewater	
Method of Treatment	
Type of Facility	
Facility Location	
Legal Location	
County	
USGS Quad	
Soils on Site	
Depth to Ground Water	
Beneficial Uses of Ground Water	
Nearest Surface Water	
Beneficial Uses of Surface Water	
Responsible Official Mailing Address	
Phone / Fax	
Facility Consultants Mailing Address	
Phone / Fax	

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E. Compliance Schedule for Required Activities

Optional items to be edited are highlighted in yellow.

The Activities in the following table shall be completed on or before the Completion Date unless modified by the Department in writing.

Compliance Activity Number Completion Date	Compliance Activity Description
CA-xxx-xx Prior to applying wastewater at site	<p>A Plan of Operation (Operation and Maintenance Manual or O&M Manual) for the wastewater land application facilities, incorporating the requirements of this permit, shall be submitted to DEQ for review and comment. The O&M manual shall be designed for use as an operator guide for actual day-to-day operations to meet permit requirements and shall include daily sampling and monitoring requirements to insure proper operation of the wastewater treatment facility. The Plan of Operation shall contain at a minimum all of the information required by the latest revision of the Plan of Operation Checklist in the WLAP Program Guidance.</p> <p>Upon approval, the manual shall be incorporated by reference into this permit and shall be enforceable as a part of this permit.</p>
CA-xxx-xx Prior to applying wastewater at site	Submit a Nuisance Odor Management Plan to DEQ for review and approval. The Odor Management Plan shall include wastewater treatment systems, land application facilities, and other operations associated with the facility. The plan shall include specific design considerations, operation and maintenance procedures, and management practices to be employed to minimize the potential for or limit odors. The plan shall also include procedures to respond to an odor incident if one occurs, including notification procedures.
CA-xxx-xx Prior to applying wastewater at site	A TDIS Management Plan may be required if ground water TDS significantly increases across the site. The plan shall identify sources of TDIS, evaluate the feasibility of isolation or removal of TDIS, and propose strategies to minimize TDIS in the wastewater.
CA-xxx-xx Prior to applying wastewater at site	For sites that have existing ground water quality that exceeds standards as a result of land application activities, a Water Quality Improvement Plan (WQIP) may be required.
CA-xxx-xx Prior to applying wastewater at site	Submit to the Department for review and approval, a well location acceptability analysis, as outlined in the <i>Handbook for Land Application of Municipal and Industrial Wastewater, April 1996</i> , pages IV-19 through IV-23 for all applicable wells located around or on the land application site.
CA-xxx-xx Prior to application of waste solids	Submit a Waste Solids Management Plan to DEQ for review and approval. The Plan shall describe how waste solids generated at the facility will be handled and disposed of to meet the requirements of section J, No. 5.

LA-000xxx-0x	Company Name	Date	Page 8
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E. Compliance Schedule for Required Activities

Compliance Activity Number Completion Date	Compliance Activity Description
CA-xxx-xx Prior to applying wastewater at site	Submit a scaled site map delineating buffer zones, homes, public access areas, private wells, canals, etc. and the actual area in acres of each HMU. Site Maps shall be supplied by the permittee and shall include at a minimum all requirements of IDAPA 58.01.17.300.05.e through f.
CA-xxx-xx Prior to applying wastewater at site	Submit plans and specifications for ground water monitoring network for DEQ review and approval, including at least one (1) upgradient well and two (2) downgradient wells.

(Add other optional requirements for grazing plans, seepage testing, and silviculture here in compliance activities to further describe particular requirements for each site.)

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F. Permit Limits and Conditions

Category	Permit Limits and Conditions																
Type of Wastewater																	
Application Site Area																	
Application Season																	
Growing Season (GS)	Site specific – see definitions, abbreviations																
Non-growing Season (NGS)	Site specific – see definitions, abbreviations																
Supervision	Optional (Certified Operator)																
Reporting Year for Annual Loading Rates	Site Specific Dates Comment: It should always be consecutive NGS & GS periods																
Growing Season Maximum Hydraulic Loading Rate (Applies to wastewater and supplemental irrigation water).	<p>Growing Season (GS) Hydraulic Loading Rate shall be no greater than the Irrigation Water Requirement (IWR) using data from the tables of the following University Of Idaho web site: http://www.kimberly.uidaho.edu/water/appndxet/index.shtml. IWR is equal to the Mean IR data from these tables divided by the irrigation system efficiency.</p> <p>In lieu of these tables, current climatic and evaporation data, or 30-year average data may be used to calculate the IWR, as defined in the 1994 Technical Interpretive Supplement, pages IV-6 and IV-7. Assume no carryover soil moisture and a leaching rate of zero in calculating the IWR. Application shall generally follow consumptive use rates for the crop throughout the season.</p>																
Non-Growing Season Maximum Hydraulic Loading Rate	<p>Soil AWC – Precipitation_{NGS} + Evapotranspiration_{NGS} for each hydraulic management unit (HMU). Include the allowable amount in inches and MG for each HMU in this section based on this equation.</p> <table><tr><th>HMU #</th><th>Field Description</th><th>Million Gallons</th><th>Inches</th></tr><tr><td>1</td><td>Pivots 1 and 2</td><td>x.xx</td><td>x.xx</td></tr><tr><td>2</td><td>Pivot 3</td><td>x.xx</td><td>x.xx</td></tr><tr><td>etc.,...</td><td></td><td></td><td></td></tr></table>	HMU #	Field Description	Million Gallons	Inches	1	Pivots 1 and 2	x.xx	x.xx	2	Pivot 3	x.xx	x.xx	etc.,...			
HMU #	Field Description	Million Gallons	Inches														
1	Pivots 1 and 2	x.xx	x.xx														
2	Pivot 3	x.xx	x.xx														
etc.,...																	
No Runoff	<p>_____ shall prepare and submit to DEQ for approval a runoff management plan with control structures and other BMPs (e.g. collection basins, berms, etc.) designed to prevent runoff from any site or fields used for wastewater land application to property not owned by _____ except in the event of a 25-year, 24-hour storm event or greater, using Western Regional Climate Center (WRCC) Precipitation Frequency Map, Figure 28 'Isopluvials of 25-YR, 24-HR Precipitation'. For this site, the 25-year, 24-hour event is _____ inches. Upon approval of the plan by DEQ, _____ shall implement the</p>																

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F. Permit Limits and Conditions

Category	Permit Limits and Conditions
	runoff management plan, and shall construct, operate, and maintain the control structures and other BMPs in accordance with the plan.
Livestock Grazing	A grazing management plan shall be submitted to DEQ for review and approval prior to any grazing activities. Grazing Plans shall follow the guidance located on the DEQ Internet site.
Ground Water Quality	Ground water quality shall be in compliance with the Ground Water Quality Rule (GWQR), IDAPA 58.01.11.
Maximum COD Loading, seasonal average in Pounds/acre-day, each HMU	50 pounds / acre-day seasonal average for growing season. 25 pounds / acre-day seasonal average for the non-growing season.
Maximum Nitrogen Loading Rate, pounds/acre-year, each HMU (from all sources including waste solids and supplemental fertilizers)	150% of typical crop uptake (see definition) or UI Fertility Guide.
Maximum Phosphorus Loading Rate, pounds/acre-year (from all sources including waste solids and supplemental fertilizers)	None. DEQ reserves the right to re-open this permit for inclusion of phosphorous limits.
Construction Plans	Prior to construction or modification of all wastewater facilities associated with the land application system or expansion, detailed plans and specifications shall be reviewed and approved by DEQ. Within 30 days of completion of construction, the permittee shall submit as-built plans for review and approval.
Buffer Zones and Wellhead Protection	Buffer zones of 500 feet or more shall be maintained between land application areas and domestic water supplies (or 1000 feet for public water supplies) unless a Department approved well location acceptability analysis indicates an alternative buffer zone is acceptable (see Idaho WLAP Handbook for discussion on approved well location acceptability analysis). (Consult with the regional office to see if a source water assessment has been completed for the area. Consult local ordinances for more strict requirements.)

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F. Permit Limits and Conditions

Category	Permit Limits and Conditions
	Berms and other BMPs shall be used to protect the well head of on-site wells.
Industrial Wastewater Buffer Zones	All buffer zones must comply with, at a minimum, local zoning ordinances. See Table 4 – Industrial Buffer Zone Scenarios, in Section IV (1994 Technical Supplement) of the Idaho Handbook for Land Application of Municipal and Industrial Wastewater.
Supplemental Irrigation Water Protection	For systems with wastewater and fresh irrigation water interconnections, DEQ-approved backflow prevention devices are required.
Odor Management	The wastewater treatment plant, land application facilities, and other operations associated with the facility shall not create a public health hazard or nuisance conditions including odors. These facilities shall be managed in accordance with a DEQ approved Odor Management Plan.
Fencing and Posting	See WLAP Guidance.
Allowable Crops	Crops grown for direct human consumption (those crops that are not processed prior to consumption) are not allowed.

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G. Monitoring Requirements

The Permittee is allowed to apply wastewater and treat it on a land application site as prescribed in the table below and in accordance with all other applicable permit conditions and schedules.

- 1) Appropriate analytical methods, as given in the *Handbook for Land Application of Municipal and Industrial Wastewater, April 1996*, or as approved by the Idaho Department of Environmental Quality (hereinafter referred to as DEQ), shall be employed. A description of approved sample collection methods, appropriate analytical methods and companion QA/QC protocol shall be included in the Operation and Maintenance Manual.
- 2) The permittee shall monitor and measure parameters as stated in the Facility Monitoring Table in this section.
- 3) Samples shall be collected at times and locations that represent typical environmental and process parameters being monitored.
- 4) Unless otherwise agreed to in writing by the DEQ, data collected and submitted shall include, but not be limited to, the parameters and frequencies in the Facility Monitoring Table on the following pages. Monitoring is required at the frequency shown in the table below if wastewater is applied anytime during the time period shown.
- 5) Ten (10) soil sample locations shall be selected for each management unit with greater than fifteen acres and Five (5) soil sample locations shall be selected for each management unit with fifteen acres or less. Three (3) soil samples shall be collected at each sample location, one at 0-12 inches, one at 12-24 inches, and one at 24-36 inches. The soil samples collected at each depth shall be composited to yield three (3) samples for analysis from each management unit.
- 6) Ground Water Monitoring Procedure: Ground Water Monitoring Wells shall be purged a minimum of three casing volumes and/or until field measurements for pH, specific conductance and temperature meet the following conditions: two successive temperature values measured at least five minutes apart are within one degree Celsius of each other, pH values for two successive measurements measured at least five minutes apart are within 0.2 units of each other, and two successive specific conductance values measured at least five minutes apart are within 10% of each other. This procedure will determine when the wells are suitable for sampling for constituents required by the permit. Other procedures, such as low flow sampling, may be considered by DEQ for approval. The static water level shall be measured prior to pumping or sampling for ground water.
- 7) Surface water sampling guidance: DEQ to review and approve methods, timing and locations for sampling prior to initial sampling event.
- 8) Annual reporting of monitoring requirements is described in Section H, Standard Reporting Requirements.
- 9) Monitoring locations are defined in Appendix 1, "Environmental Monitoring Serial Numbers".

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G. Monitoring Requirements

Facility Monitoring Table

Frequency	Monitoring Point	Description/Type of Monitoring	Parameters
Daily	Flow meter	Flow of wastewater into land application system	Volume (million gallons and acre-inches) to each hydraulic management unit (HMU), record monthly and annually
Monthly	Effluent to land application	Wastewater quality into land application system – 24-hr. Composite	Chemical Oxygen Demand, Total Kjeldahl Nitrogen, Ammonia-Nitrogen, Nitrite + Nitrate-Nitrogen, Total Phosphorous, Chloride, Electrical Conductivity, Potassium, pH
Quarterly	Effluent to land application	Wastewater quality into land application system	Total Dissolved Inorganic Solids (TDIS) – See Table B-1. Submit analysis of individual ions in addition to TDIS.
Quarterly (for the first year only, 4 sample events)	Effluent to land application	Wastewater quality into land application system – 24-hr. composite.	Total Dissolved Solids (TDS), Volatile Dissolved Solids (VDS)
Quarterly (for the first year only, 4 sample events)	Effluent to land application	Grab sample for bacteria	Colony numbers for Fecal Coliform, Total Coliform, Fecal Streptococcus and Pseudomonas, standard presence absence test for Listeria (if present, determine specific type)
Daily	Flow meter or Calibrated Pump Rate	Supplemental Irrigation Water	Volume (million gallons and acre-inches) to each HMU, report monthly and annually.
Twice per year (May and Oct)	Supplemental Irrigation at diversions	Grab sample	Nitrate + Nitrite Nitrogen, Total Phosphorous, Ortho Phosphorus, Total Dissolved Solids, Volatile Dissolved Solids, Chloride, Total Kjeldahl Nitrogen
Quarterly (Feb, May, Aug, and Nov)	Ground Water monitoring wells, listed in appendix 1	See Note 6	Nitrate-Nitrogen, Total Phosphorous, Total Dissolved Solids, water table elevation, water table depth, total iron, total manganese, chloride, dissolved iron ¹ , dissolved manganese ¹ , pH, conductivity, and temperature.

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G. Monitoring Requirements

Frequency	Monitoring Point	Description/Type of Monitoring	Parameters
Twice per year (May and Oct)	Nearest Surface Water – DEQ shall review and approve locations prior to initial sampling event.	Grab samples of surface water upstream and downstream from land application site.	Nitrate + Nitrite Nitrogen, Total Phosphorous, Ortho Phosphorus, Total Dissolved Solids, Volatile Dissolved Solids, Chemical Oxygen Demand, Total Kjeldahl Nitrogen
Monthly	Each HMU	Calculate IWR for each crop type	Volume (million gallons and acre-inches) to each HMU, record monthly
Daily during NGS (if land applying)	Meteorological data and field conditions, each HMU	Temperature, Precipitation, and field conditions.	High and low air temperatures and precipitation during each 24-hour period. Field conditions observations for areas of ponding, etc.)
Note: Review permit strategy for phosphorous with program office	Surface water upstream and downstream of site	For sites that apply high levels of phosphorous (for example, twice crop uptake or more) and ground water discharges to nearby surface water	Total Phosphorous, Ortho Phosphorous, Electrical Conductivity
Twice per year (April and Nov)	Each soil monitoring unit	See note 5	Electrical Conductivity, Nitrate-Nitrogen, Ammonium Nitrogen, Plant Available Phosphorus, pH, % organic matter, potassium, DTPA Fe and Mn. Notes: Add SAR if sodium loading rates are high Phosphorous – use Olsen method for soils with pH 6.5 or higher. Use Bray method if soil pH is <6.5
Annually	Each HMU	Crop type and yield	Pounds/acre and total pounds per HMU (specify moisture basis)
	Each HMU	Plant tissue analysis: Composite sample of harvested portion	Nitrate-nitrogen, Total Kjeldahl Nitrogen, Total Phosphorus, ash (dry basis)
	Each HMU	Calculate crop nitrogen, phosphorous, and ash removal	Pounds/acre and total pounds per HMU (dry basis)
	Each HMU	Calculate NGS wastewater loading rate	Million gallons & Inches/NGS

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G. Monitoring Requirements

Frequency	Monitoring Point	Description/Type of Monitoring	Parameters
	Each HMU	Calculate GS wastewater loading rate	Million gallons & Inches/GS
	Each HMU	Calculate seasonal average COD loading rate (GS and NGS)	Pounds/acre-day
	Each HMU	Calculate wastewater nitrogen loading rate	Pounds/acre-year
	Each HMU	Calculate wastewater phosphorous loading rate	Pounds/acre-year
	Each HMU	Calculate wastewater TDIS loading rate	Pounds/acre-year
	Each HMU	Report nitrogen and phosphorous fertilizer application rates	Type and Pounds/acre-year
Annually	Each HMU	Calculate Inorganic TDS loading (NVDS) from supplemental irrigation application.	NVDS applied in lbs/ac-yr
Annually	All flow measurement locations.	Flow measurement calibration of all flows to land application.	Document the flow measurement calibration of all flow meters and pumps used directly or indirectly measure all wastewater, tail water, flushing water, and supplemental irrigation water flows applied to each HMU.
Annually	All supplemental irrigation pumps directly connected to the wastewater distribution system.	Backflow testing	Document the testing of all backflow prevention devices for all supplemental irrigation pumps directly connected to the wastewater distribution system(s). Report the testing date(s) and results of the test (pass or fail). If any test failed, report the date of repair or replacement of backflow prevention device, and if the repaired/replaced device is operating correctly.

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G. Monitoring Requirements

Frequency	Monitoring Point	Description/Type of Monitoring	Parameters
April of first and last permit years only.	Groundwater Monitoring Wells listed in Appendix 1.	Grab sample of groundwater (See Note 6).	Sodium, Potassium, Calcium, Magnesium, carbonate, bicarbonate.
April of first and last permit years only.	Domestic and municipal wells within ¼ mile of all land application acreage.	Grab sample from domestic and municipal wells (with well owner's permission. See note 6).	Specific Conductivity, Total Dissolved Solids (TDS), Nitrite + Nitrate Nitrogen, Total Phosphorus, Chloride, Sulfate, Total Iron, Total Manganese, Sodium, Potassium, Calcium, Magnesium, carbonate, bicarbonate, Dissolved Iron ¹ , Dissolved Manganese ¹ .

1. Analytical results are required for dissolved iron and/or manganese only if the results for total iron and/or manganese exceed the standards in IDAPA 58.01.11.200.01.b.

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H. Standard Reporting Requirements

- 1.) The Permittee shall submit an Annual Wastewater-Land Application Site Performance Report ("Annual Report") prepared by a competent environmental professional no later than January 31 of each year, which shall cover the previous reporting year. The Annual Report shall include an interpretive discussion of monitoring data (ground water, soils, hydraulic loading, wastewater etc.) with particular respect to environmental impacts by the facility.
- 2.) The annual report shall contain the results of the required monitoring as described in *Section G. Monitoring Requirements*. If the permittee monitors any parameter more frequently than required by this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the annual report.
- 3.) The annual report shall be submitted to the Engineering Manager in the applicable Regional DEQ Office.

Boise Regional Office
1445 N. Orchard
Boise, ID 83706-2239
208-373-550

Coeur d'Alene Regional Office
2110 Ironwood Parkway
Coeur d'Alene, ID 83814
208-769-1422

Idaho Falls Regional Office
900 N. Skyline, Suite B
Idaho Falls, ID 83402
208-528-2650

Lewiston Regional Office
1118 "F" Street
Lewiston, ID 83501
208-799-4370

Pocatello Regional Office
444 Hospital Way, #300
Pocatello, ID 83201
208-236-6160

Twin Falls Regional Office
601 Pole Line Road, Suite 2
Twin Falls, ID 83301
208-736-2190

A copy of the annual report shall also be mailed to:

Richard Huddleston, P.E.
Wastewater Program Manager
1410 N. Hilton
Boise, ID 83706
208-373-0561

- 4.) Notice of completion of any work described in *Section E. Compliance Schedule for Required Activities* shall be submitted to the Department within 30 days of activity completion. The status of all other work described in Section E shall be submitted with the Annual Report.
- 5.) All laboratory reports containing the sample results for monitoring required by *Section G. Monitoring Requirements* of this permit shall be submitted with the Annual Report.

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I. Standard Permit Conditions: Procedures and Reporting

1. The permittee shall at all times properly maintain and operate all structures, systems, and equipment for treatment, operational controls and monitoring, which are installed or used by the permittee to comply with all conditions of the permit or the Wastewater-Land Application Permit Regulations, in conformance with a DEQ approved, current Plan of Operations (Operations and Maintenance Manual) which describes in detail the operation, maintenance, and management of the wastewater treatment system. This Plan of Operations shall be updated as necessary to reflect current operations.
2. Wastewater(s) or recharge waters applied to the land surface must be restricted to the premises of the application site unless permission has been obtained from the DEQ authorizing a discharge into the waters of the State as stated in IDAPA 58.01.02.600.02.
3. Wastewater must not create a public health hazard or nuisance condition as stated in IDAPA 58.01.02.600.03. In order to prevent public health hazards and nuisance conditions the permittee shall:
 - a. Apply wastewater as evenly as practicable to the treatment area;
 - b. Prevent organic solids (contained in the wastewater) from accumulating on the ground surface to the point where the solids putrefy or support vectors or insects; and
 - c. Prevent wastewater from ponding in the fields to the point where the ponded wastewater putrefies or supports vectors or insects.
4. The permittee shall:
 - a. Manage the wastewater land application treatment site as an agronomic operation where vegetative cover is grown and harvested or grazed to utilize the nutrients and minerals in the wastewater, and,
 - b. Not hydraulically overload any particular areas of the wastewater land application treatment site.
5. All waste solids, including dredgings and sludges, shall be utilized or disposed in a manner which will prevent their entry, or the entry of contaminated drainage or leachate therefrom, into the waters of the state such that health hazards and nuisance conditions are not created; and to prevent impacts on designated beneficial uses of the ground water and surface water. The permittee's management of waste solids shall be governed by the terms of the DEQ approved Waste Solids Management Plan, which upon approval shall be an enforceable portion of this permit.
6. If the permittee intends to continue operation of the permitted facility after the expiration of an existing permit, the permittee shall apply for a new permit at least six months prior to the expiration date of the existing permit in accordance with the Waste Water Land Application Permit Regulations and include seepage tests on all lagoons per latest DEQ procedures.
7. The permittee shall allow the Director of the Idaho Department of Environmental Quality or the Director's designee (hereinafter referred to as Director), consistent with Title 39, Chapter 1, Idaho Code, to:
 - a. Enter the permitted facility,
 - b. Inspect any records that must be kept under the conditions of the permit.
 - c. Inspect any facility, equipment, practice, or operation permitted or required by the permit.
 - d. Sample or monitor for the purpose of assuring permit compliance, any substance or any parameter at the facility.
8. The permittee shall report to the Director under the circumstances and in the manner specified in this section:
 - a. In writing thirty (30) days before any planned physical alteration or addition to the permitted facility or activity if that alteration or addition would result in any significant change in information that was submitted during the permit application process.
 - b. In writing thirty (30) days before any anticipated change which would result in non-compliance with any permit condition or these regulations.
 - c. Orally within twenty-four (24) hours from the time the permittee became aware of any non-compliance which may endanger the public health or the environment at telephone numbers provided in the permit by the Director (see below)

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I. Standard Permit Conditions: Procedures and Reporting

DEQ Regional Office; see Permit Certificate Page

Emergency 24 Hour Number: 1-800-632-8000

- d. In writing as soon as possible but within five (5) days of the date the permittee knows or should know of any non-compliance unless extended by the DEQ. This report shall contain:
 - i. A description of the non-compliance and its cause;
 - ii. The period of non-compliance including to the extent possible, times and dates and, if the non-compliance has not been corrected, the anticipated time it is expected to continue; and
 - iii. Steps taken or planned to reduce or eliminate reoccurrence of the non-compliance.
 - e. In writing as soon as possible after the permittee becomes aware of relevant facts not submitted or incorrect information submitted, in a permit application or any report to the Director. Those facts or the correct information shall be included as a part of this report.
9. The permittee shall take all necessary actions to prevent or eliminate any adverse impact on the public health or the environment resulting from permit noncompliance.
10. The permittee shall determine (on an on-going basis) if any noxious weed problems relate to the permitted sites. If problems are present, coordinate with the Idaho Department of Agriculture or the local County authority regarding their requirements for noxious weed control. Also address these control operations in an update to the Operations and Maintenance Manual.

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J. Standard Permit Conditions: Modifications, Violation, and Revocation

1. The permittee shall furnish to the Director within reasonable time, any information including copies of records, which may be requested by the Director to determine whether cause exists for modifying, revoking, re-issuing, or terminating the permit, or to determine compliance with the permit or these regulations.
2. Both minor and major modifications may be made to this permit as stated in IDAPA 58.01.17.700.01 and 02 with respect to any conditions stated in this permit upon review and approval of the DEQ.
3. Whenever a facility expansion, production increase or process modification is anticipated which will result in a change in the character of pollutants to be discharged or which will result in a new or increased discharge that will exceed the conditions of this permit, or if it is determined by the DEQ that the terms or conditions of the permit must be modified in order to adequately protect the public health or environment, a request for either major or minor modifications must be submitted together with the reports as described in Section L *Standard Reporting Requirements*, and plans and specifications for the proposed changes. No such facility expansion, production increase or process modification shall be made until plans have been reviewed and approved by the DEQ and a new permit or permit modification has been issued.
4. Permits shall be transferable to a new owner or operator provided that the permittee notifies the Director by requesting a minor modification of the permit before the date of transfer.
5. Any person violating any provision of the Wastewater Land Application Permit Regulations, or any permit or order issued thereunder shall be liable for a civil penalty not to exceed ten thousand dollars (\$10,000) or one thousand dollars (\$1,000) for each day of a continuing violation, whichever is greater. In addition, pursuant to Title 39, Chapter 1, Idaho Code, any willful or negligent violation may constitute a misdemeanor.
6. The Director may revoke a permit if the permittee violates any permit condition or the Wastewater Land Application Permit Regulations.
7. Except in cases of emergency, the Director shall issue a written notice of intent to revoke to the permittee prior to final revocation. Revocation shall become final within thirty-five (35) days of receipt of the notice by the permittee, unless within that time the permittee request an administrative hearing in writing to the Board of Environmental Quality pursuant to the Rules of Administrative Procedures contained in IDAPA 58.01.23.
8. If, pursuant to Idaho Code 67-5247, the Director finds the public health, safety or welfare requires emergency action, the Director shall incorporate findings in support of such action in a written notice of emergency revocation issued to the permittee. Emergency revocation shall be effective upon receipt by the permittee. Thereafter, if requested by the permittee in writing, a revocation hearing before the Board of Environmental Quality shall be provided. Such hearings shall be conducted in accordance with the Rules of Administrative Procedures contained in IDAPA 58.01.23.
9. The provisions of this permit are severable and if a provision or its application is declared invalid or unenforceable for any reason, that declaration will not affect the validity or enforceability of the remaining provisions.
10. The permittee shall notify the DEQ at least six (6) months prior to permanently removing any permitted land application facility from service, including any treatment, storage, or other facilities or equipment associated with the land application site. Prior to commencing closure activities, the permittee shall: a) participate in a pre-site closure meeting with the DEQ; b) develop a site closure plan that identifies specific closure, site characterization, or cleanup tasks with scheduled task completion dates in accordance with agreements made at the pre-site closure meeting; and c) submit the completed site closure plan to the DEQ for review and approval within forty-five (45) days of the pre-site closure meeting. The permittee must complete the DEQ approved site closure plan.

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Appendix 1
Environmental Monitoring Serial Numbers

HYDRAULIC MANAGEMENT UNITS

Serial Number	Description	Acres
MU-xxxxxx		
MU-xxxxxx		
MU-xxxxxx		
MU-xxxxxx		

WASTEWATER SAMPLING POINTS

Serial Number	Description
WW-xxxxxx	
WW-xxxxxx	

SURFACE WATER SAMPLING POINTS

Serial Number	Description
SW-xxxxxx	
SW-xxxxxx	

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Appendix 1
Environmental Monitoring Serial Numbers

SOIL MONITORING UNITS

Serial Number	Description	Associated MU
SU-xxxxxx		
SU-xxxxxx		
SU-xxxxxx		
SU-xxxxxx		

GROUND WATER MONITORING

Serial Number	Description (private, irrigation, dedicated monitoring)	Location
GW-xxxxxx		
GW-xxxxxx		
GW-xxxxxx		

LAGOONS

Serial Number	Description
LG-xxxxxx	Lagoon no. 1
LG-xxxxxx	Lagoon no. 2

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Appendix 2
Site Maps

Site Maps shall be supplied by the permittee and shall include at a minimum all requirements of IDAPA 58.01.17.300.05.e through f.

Site Map No. 1

Attach map showing general locations (property boundaries) of industrial plant and WLAP site. Include Township(s), Range(s), Section(s).

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Appendix 2
Site Maps

Site Map No. 2

Attach detailed map that shows the following:

- All Hydraulic Management Units. Include MU serial #'s
- All Soil Monitoring Units. Include SU serial #'s
- All lagoons/storage ponds. Include serial #'s
- All Wastewater and Supplemental Irrigation distribution systems for the WLAP site including sumps, pipelines, ditches, irrigation diversions, irrigation systems (pivots, wheel lines, etc.), tailwater collection systems, and any other item of relevance.

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Appendix 2
Site Maps

Site Map No. 3

Attach detailed map showing location of:

- All monitoring wells used for permit compliance (may include domestic wells if used for groundwater monitoring compliance).
- All public and private drinking water supply sources within ¼ mile of WLAP site.
- All springs, wetlands, and surface waters within ¼ mile of WLAP site.
- Groundwater contours & direction of flow (include additional map(s) if flow direction changes seasonally)

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Appendix 2
Site Maps

Site Map No. 4

Attach map showing location of:

- All dwellings within $\frac{1}{4}$ mile of WLAP site.
- All public and private gathering places within $\frac{1}{4}$ mile of WLAP site
- All public roads within $\frac{1}{4}$ mile of WLAP site

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A.12 Program Forms and Spreadsheets

Please contact DEQ, Permits and Enforcement, in Boise at 208-373-0502 or in Coeur d'Alene at 208-769-1422 for any questions or clarification of the application materials.

Application for Wastewater Reuse Permit

Instructions: Complete the following form and attachments as completely as possible. Failure to provide sufficient information will delay processing of the application and final action on the permit. A pre-application meeting between the applicant and DEQ is strongly encouraged to discuss site specific issues and level of detail needed. If clarification is needed, contact the DEQ office in your Region.

Type of application (attach appropriate checklists) <div style="margin-top: 10px;"> New <input type="checkbox"/> Renewal <input type="checkbox"/> Waiver <input type="checkbox"/> </div> <div style="margin-top: 10px;"> Major Modification <input type="checkbox"/> Minor Modification <input type="checkbox"/> </div>	For DEQ use only
Legal Name of Applicant Address Facility Address, if different <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Responsible Official Name Title Address Phone/Fax </div> <div style="width: 45%;"> Alternate Official </div> </div>	
Attachments (complete all that apply) <div style="margin-top: 5px;"> <input type="checkbox"/> Facility Information </div> <div style="margin-top: 10px;"> <input type="checkbox"/> List of local, state, federal permits, licenses, and approvals related to activity which have been applied for and which have been received and the dates of application or approval. Include planning & zoning or conditional use permit. </div> <div style="margin-top: 10px;"> <input type="checkbox"/> Copy of lease, rental agreement, or ownership documentation. </div> <div style="margin-top: 10px;"> <input type="checkbox"/> Preliminary Technical Report and Checklist: including climatic, hydrogeologic, soils, wastewater quantity and quality, site characteristics, buffer distances, and general description of application methods. </div> <div style="margin-top: 10px;"> <input type="checkbox"/> Plan of Operation and Checklist: including operation, maintenance, and management of land application systems. If new, submit draft outline of plan of operation; if existing, submit detailed plan of operation. </div>	
The information contained in this application and attached documents is true and correct to the best of my knowledge and belief. Signature of Owner or legally authorized Representative _____ <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> Title </div> <div style="width: 45%;"> Date </div> </div>	

Facility Information

Type of Waste	<input type="checkbox"/> Municipal/Domestic <input type="checkbox"/> Cheese Processing <input type="checkbox"/> Potato Processing <input type="checkbox"/> Sugar Beet Processing <input type="checkbox"/> Industrial Processing <input type="checkbox"/> Other _____
Method of Treatment	<input type="checkbox"/> Rapid Infiltration <input type="checkbox"/> Slow Rate <input type="checkbox"/> Overland Flow
Type of Facility	<input type="checkbox"/> Public <input type="checkbox"/> Private <input type="checkbox"/> Federal
Amount of wastewater land applied	_____ Million Gallons Annually
Site Elevation	_____ Feet
Legal Location (Township, Range, Section)	<input type="checkbox"/> Township <input type="checkbox"/> Range <input type="checkbox"/> Section
County	
USGS Quadrangle	
Representative soil profile (textures and depths to 60 inches)	
Seasonal High Ground Water	<input type="checkbox"/> Depth to seasonal high ground water <input type="checkbox"/> Season encountered
Depth to Aquifer	<input type="checkbox"/> Depth to first water <input type="checkbox"/> Depth to regional aquifer
Beneficial Uses of Ground Water	<input type="checkbox"/> Agriculture <input type="checkbox"/> Industrial <input type="checkbox"/> Domestic <input type="checkbox"/> Aquaculture
Nearest surface water and distance	
Beneficial uses of surface water	<input type="checkbox"/> Agriculture <input type="checkbox"/> Industrial <input type="checkbox"/> Domestic <input type="checkbox"/> Recreation <input type="checkbox"/> Aquatic Life
Engineer/Consultant Name/Address Phone/Fax	
Engineer/Consultant Name/Address Phone/Fax	

Wastewater Reuse Plan of Operation Checklist

For new facilities, a general outline of the plan of operation must be provided with the permit application. A detailed plan of operation must be provided at the 50% completion point of construction. In addition, after one (1) year of operation, the plan must be updated to reflect actual operating procedures. The checklist should be used as a guide in preparing the plan of operation. Include the completed checklist with your plan of operation. A pre-application meeting between the applicant and DEQ is strongly encouraged. If any item needs clarification, contact the DEQ Office in your Region.

YES	NA	Plan of Operation Checklist
		Operation & Management Responsibility
		a. Operator, manager responsibility
		b. Training requirements
		c. List of reference publications
		Permits and Standards
		a. WLAP/NPDES permit included
		b. Permit requirements listed
		c. Treatment requirements
		General Plant Description
		a. Type of treatment described
		b. Principal design criteria
		c. Flow diagram
		d. Hydraulic profile
		e. Characterization of Wastewater
		h. List of unit operations
		i. Overall plant efficiency
		Description, Operation and Control of Unit Operations
		a. Description of process
		c. Normal operation or control of process (valve position, flow rate, sludge depth, etc)
		d. List major components & mechanical equipment
		f. Schematic diagram of each unit

YES	NA	Plan of Operation Checklist
		h. Discussion of common operating problems
		i. Emergency operation or alternate operation
		k. Discuss laboratory tests for unit control
		l. Discuss startup procedures
		m. Brief operation instructions for each piece of equipment w/reference to manufacturers O&M Manual
		Land Application Site
		a. Map of the current hydraulic management units and associated acres
		b. Description of any proposed changes to the land application acreage.
		c. Map of type(s) of irrigation system(s) (pivot, hand lines,...) and the corresponding irrigation efficiency(ies).
		Wastewater Characterization
		a. Identification of the quantity of land applied wastewater (per day, per month, per year) and how the quantity values were determined.
		b. Characterization of the concentrations of key constituents in the wastewater proposed for land application and how the concentration values were determined. <i>Basic constituents of interest are: total nitrogen, total phosphorus, and Chemical Oxygen Demand (COD). Depending on the wastewater source, concentrations of other constituents may be important. For industrial systems, concentrations of total dissolved inorganic solids (TDIS) and/or metals may be pertinent. For municipal systems, total coliform counts may be presented.</i>
		Cropping Plan
		a. Description of proposed crop selection and a 5-year rotation plan. For each crop, description of: planting and harvesting data, irrigation sensitivity, rooting depth, expected yield (compared to yield data published by Idaho county, and expected crop uptake values for key constituents in the wastewater.
		b. For each crop, calculated the Irrigation Water Requirement (IWR) and how the IWR value(s) were determined.
		c. If proposing to utilize wastewater for tree irrigation, a silvicultural plan (a plan covering the care and cultivation of the trees).
		d. Description of the proposed future use of fertilizers at the site and nutrient loading associated with fertilizer use.
		Hydraulic Loading Rate
		a. Wastewater hydraulic loading rates by month for growing season and non-growing season.
		b. Description of the availability of supplemental irrigation water for the site and whether or not supplemental irrigation water is expected to be used at the site.

YES	NA	Plan of Operation Checklist
		Documentation that water rights exist to provide supplemental irrigation. If expected to be used, the typical supplemental irrigation water hydraulic loading rates for potential crops.
		c. Description of irrigation scheduling for the site.
		d. If storage of wastewater is proposed, a monthly water balance for the storage structure(s) reflecting: number of days of storage, required freeboard, minimum depth, evaporation, precipitation, and flows into and out of the structure.
		Constituent Loading Rates
		a. The expected growing season and non-growing season loading rates for key constituents including any waste solids and/or fertilizers proposed to be applied to the land application site.
		b. Comparison of expected constituent loading rates to applicable crop uptake values for the site.
		c. Identification of the design limiting constituent.
		Compliance Activities
		a. A summary and status of and compliance activities.
		Seepage Rate Testing
		a. Schedule and procedure for seepage rate testing of any wastewater lagoons.
		Site Management Plan
		a. Buffer Zone Plan including map of land application site that includes the following buffer objects: dwellings, areas of public access, canals/ditches, private water sources, and public water sources. Map to include signage and fencing and both DEQ guideline distances as well as actual distances.
		b. Grazing Management Plan if any grazing activities are proposed at the land application site.
		c. Nuisance Odor Management Plan. <i>For systems with higher strength wastewater (wastewater with a greater potential to create odors), it is highly recommended that a Nuisance Odor Management Plan be prepared as part of the permit application.</i>
		d. Waste Solids Management Plan. <i>If waste solids are managed off-site, refer to IDAPA 58.01.02, Section 650 regarding sludge usage.</i>
		e. TDIS (Total Dissolved Inorganic Solids) Management Plan
		f. Runoff Management Plan addressing best management practices for minimization of runoff and ponding.

Guidance for Reclamation and Reuse of Municipal and Industrial Wastewater

Appendix

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YES	NA	Plan of Operation Checklist
		Monitoring
		a. Description of the quantity of land applied wastewater is proposed to be monitored (methodology, frequency, location).
		b. Sampling and analysis plan for the land applied wastewater (constituents, disinfection level, methodology, frequency, location).
		c. Method of calculating hydraulic and constituent loading.
		d. If supplemental irrigation water is expected to be used, monitoring plan for quantity of land applied supplemental irrigation water (methodology, frequency, location).
		e. Soil monitoring plan (constituents, soil depths, methodology, frequency, location).
		f. Groundwater monitoring plan (constituents, methodology, frequency, location).
		g. Description of how crop uptake values are proposed to be determined (plant tissue monitoring, table values...).
		h. Other proposed monitoring for the site.
		i. Meteorological monitoring plan for site.
		Site Operations and Maintenance
		a. Description of who will operate and maintain the wastewater treatment facilities and land application site.
		b. Operator certification credentials—credentials currently held and any plans for future certifications.
		c. If a party other than the applicant operates and maintains the land application site, a copy of the signed contract or agreement outlining how the site will be operated to meet the conditions of the permit
		Solids Handling and Processing
		a. Detailed discussion of processing, storage, and disposal and common problems
		b. Site selection criteria
		Laboratory Testing
		a. Outline sampling and testing program
		b. Sampling location, specific tests, frequency
		c. List of laboratory references
		d. Interpretation and significance of lab results
		e. Sample laboratory worksheets

YES	NA	Plan of Operation Checklist
		Maintenance
		a. General maintenance information
		b. Preventative maintenance schedule
		c. Trouble-shooting charts or guides
		d. Maintenance record system
		e. Manufacturer's manuals
		Records and reports
		a. Describe importance of records & reports
		b. Describe daily operating log & provide sample format
		c. Describe maintenance records and show example
		d. Describe laboratory records & reports & provide sample
		f. Explain requirements of annual reports and show example
		j. How to report permit violations
		h. How to report accidents
		Store room and Inventory
		a. List of spare parts
		b. List of vendors and outside contractors and suppliers
		Personnel
		a. Manpower requirements and qualifications
		Emergency Operating Plan
		a. List of emergency numbers
		b. Description of emergency procedures

January 8, 1993

MEMORANDUM

To: Wastewater-Land Application Permit Program Regulated Community

From: Michael Cook, Program Coordinator
Wastewater-Land Application Permit Program

Subject: Transmittal of Standard Electronic Format for Land Application of Wastewater
Program Monitoring Data.

Dear Member of the Regulated Community:

The following describes a major development in the Wastewater-Land Application Permit Program of which you must be aware.

THE NEED FOR PERMITTEES TO SUBMIT MONITORING DATA ON DISK

As a member of the Land Application of Wastewater regulated community, your facility is generating monitoring data on a regular schedule.

To date, the regulated community has been reporting this data in their annual reports hardcopy.

It is important that this data be reported in a uniform way by all permittees for use by Division of Environmental Quality (DEQ) to analyze site performance and permit compliance. Digital format (on a computer) is the most efficient means for DEQ analysis purposes.

ADVANTAGES TO SUBMITTING MONITORING DATA DIGITALLY

It is advantageous not only for the DEQ, but to the regulated community to submit monitoring data digitally. For example:

- 1) It makes analysis of data tremendously efficient, thus saving tax dollars,
- 2) It enables DEQ to efficiently evaluate existing monitoring protocols, in order to:
 - a) modify frequencies and parameters of the monitoring program in many cases, and
 - b) to assist in establishing de minimis criteria for different types of monitoring, and
- 3) Having data in digital format enables the permittee to evaluate the performance of his own site.

THE NEED FOR PAST MONITORING DATA TO BE SUBMITTED ON DISK

To date, all data generated as part of the Wastewater-Land Application Program has been submitted hardcopy. The Department recognizes the onerous task of entering past data and reporting this to the Department, but asks the regulated community to *please consider entering past data in the digital format provided*. Complete data sets would help in evaluating present monitoring parameters and frequencies.

SOFTWARE DEVELOPED FOR DATA ENTRY

DEQ has developed standard reporting spreadsheets which will take the place of the annual report form previously used. Hardcopy tables of data entered in the above mentioned tables will still be required in the annual report. Use of these spreadsheets to report data requires Lotus 1-2-3 software to enter data on.

If you do not have access to a computer or spreadsheet software please call this office (334-5898). We have an alternate stand alone data entry program you may use to enter data.

SOFTWARE ENCLOSED FOR USE BY THE REGULATED COMMUNITY

Attached is a disk which has the following seven Lotus spreadsheets on it:

- *wastewater,*
- *soils,*
- *lysimeter,*
- *ground water,*
- *hydraulic loading,*
- *management unit summary spreadsheet, and*
- *permit site summary.*

Attached are hardcopy examples of each of the spreadsheets. For each spreadsheet there are examples of both blank spreadsheets and those containing data.

File names for these spreadsheets are, respectively:

- *LWWWFL.WK1*
- *LWSOIFL.WK1*
- *LWLYSFL.WK1*
- *LWGWQL.WK1*
- *LWHYDL.WK1*
- *LWMSUMFL.WK1*
- *LWSSUMFL.WK1*

ANNUAL REPORTING REQUIREMENT CHANGES

The annual report submitted to DEQ should have the following:

- *hardcopy tables of data,*
- *narrative where appropriate and required by permit conditions,*
- *all monitoring data on the spreadsheets provided to you on disk.*

Enter only those data you are required to report. There may be some data you are not required to collect (e.g. lysimeter).

Where reporting conventions differ from the spreadsheet to your permit, please use conventions of the software. For example, Most permits have a Schedule B a "Treatment Field Monitoring" section. The information requested in the spreadsheets attached should be followed rather than that in this section, if there is a conflict.

MONITORING POINT LABELING

We have given serial numbers, as applicable, to each of the following monitoring points:

- *monitoring wells,*
- *wastewater sampling points,*
- *surface water sampling points,*
- *hydraulic management units (fields), and*
- *soil monitoring units.*

We have done this so that you may report data to DEQ in a standardized format assuring unique identifiers for all data.

You must use these serial numbers to identify what sampling point or area your data pertains to, and will use these designations when inputting data into the spreadsheets.

Attached are five tables which have listed the serial numbers you are to use. These are listed under your permit number.

ERRORS IN SERIAL NUMBER DESIGNATIONS OR DELINEATIONS

If you discover an error in our labeling of management units, soil monitoring units, monitoring wells, etc. please report these errors to Department immediately so they may be corrected before data is entered under incorrect designations.

HOW TO USE THE SOFTWARE TO INPUT DATA

As mentioned above, the spreadsheets are LOTUS (2.01) 1-2-3 spreadsheets. General instructions follow. More specific instructions peculiar to each spreadsheet are noted within the spreadsheets themselves.

General Instructions for inputting monitoring data into spreadsheets

-
- Enter your permit number only in the form LA-000XYZ. Note capital LA, dash and six numbers following- nine characters in all.
 - Enter all dates utilizing the Lotus @date() function formatted for long international format.
 - Enter the version of Lotus you are using in the upper left corner of each spreadsheet.
 - Enter your permit number in the upper left corner of each spreadsheet.
 - Enter the reporting year in the upper mid or left corner of each spreadsheet.
 - Enter data in the units specified in the respective column.
 - Do not alter the spreadsheet heading columns, especially the row just above where you begin entering data.
 - If a parameter was analyzed but not detected, enter a -1.0.
 - If a parameter was not analyzed, leave the cell blank.
 - Cells in the top row only not having an actual value or a -1.0, enter -33.3 (or xxx if a character or label cell) (this is for data translation purposes).
 - If you are monitoring for parameters not included on the spreadsheet, add a column to the far right of the spreadsheet.
 - Make careful note of all special instructions appearing on each spreadsheet.

SPECIAL INSTRUCTIONS FOR HYDRAULIC APPLICATION RATE SPREADSHEET

One hydraulic load entry for every calendar month is made for each management unit. By convention, date each calendar month entry as the 15th of each month [e.g. @date(92,9,15)].

SPECIAL INSTRUCTIONS FOR GROUND WATER DATA SPREADSHEET

Sampling Station is the township, range, section, 1/4,1/4,1/4 (numeric designator) location of the well. Example:

03N 04S 06bbc02

Please note capital letters in township and range, spaces between them, preceding zeros if one digit, lower case 1/4, 1/4, 1/4 section designators, and a two digit numeric value if there is more than one well in the same 1/4, 1/4, 1/4 section.

REGULATED COMMUNITY'S INPUT NEEDED ON SOFTWARE DESIGN

To make this a useful tool for the regulated community to perform evaluations on their respective sites, DEQ welcomes your suggestions.

FURTHER QUESTIONS ABOUT THE SOFTWARE

Please contact me at 334-5898 if you have specific questions about this development in the Wastewater-Land Application Program.

ANNUAL REPORT FORM-LAND APPLICATION OF WASTEWATER
PERMITTED FACILITY

This is your reporting form for your annual report as required in your land application of wastewater permit. It is important to note that **you are required to provide only that information specified in your permit.** Permits have different reporting requirements, some being more extensive than others.

You will need to make copies of parts B, D, E, F, and H if you have more than one field, sampling date, and/or monitoring well respectively.

Please report analysis results in units as given on the reporting forms.

We hope this form will be of help to you. If you have any questions regarding the use of this form, please contact the DEQ Field Office in your area.

Permitted Facility Name:		
Mailing Address:		
Permit No.:		
Date Submitted:		
Reporting period: (month/year)	from:	to:
Permit Expiration Date:		

Please note: If you have any questions regarding the completion of your annual report, please call the DEQ Wastewater Land Application staff at (208) 373-0502.

A. HYDRAULIC APPLICATION RATE (average rate over entire land application site)

1. Total acreage of land application site(s)

2. Hydraulic application rate:

Column No.					
1	2	3	4	5	6
Year	Month	Million Gallons Wastewater	Acre-Inches Per Acre Wastewater	Million Gallons Supplemental Irrigation Water	Acre Inches Per Acre Irrigation Water
	January				
	February				
	March				
	April				
	May				
	June				
	July				
	August				
	September				
	October				
	November				
	December				
Totals					
		Million Gallons	Acre-Inches Per Acre	Million Gallons	Acre- Inches Per Acre

Column 1: Enter the appropriate year (e.g. 1995) that the monthly loading took place.

Column 3: Enter total wastewater applied in million gallons.

Column 4: Multiply each monthly entry in column 3 by 36.83 to get acre inches; then divide by total acres to get acre inches per acre.

Column 5: Enter estimate of supplemental irrigation water applied in million gallons.

Column 6: Multiply Column 5 by 36.83 and then divide by the total acreage to get acre-inches per acre of supplemental irrigation water.

B. HYDRAULIC APPLICATION RATE BY MANAGEMENT UNIT

Please use a separate page for each Hydraulic Management Unit.

1. Hydraulic Management Unit _____ Acres _____ (field or parcel #)

2. Hydraulic application rate:

Column No.					
1	2	3	4	5	6
Year	Month	Million Gallons Wastewater	Acre-Inches Per Acre Wastewater	Million Gallons of Supplemental Irrigation Water	Acre Inches Per Acre Irrigation Water
	January				
	February				
	March				
	April				
	May				
	June				
	July				
	August				
	September				
	October				
	November				
	December				
Totals					
		Million Gallons	Acre-Inches Per Acre	Million Gallons	Acre-Inches Per Acre

Column 1: Enter the appropriate year (e.g. 1995) that the monthly loading took place.

Column 3: Enter total wastewater applied in million gallons.

Column 4: Multiply each monthly entry in column 3 by 36.83 to get acre inches; then divide by total acres to get acre inches per acre.

Column 5: Enter estimate of supplemental irrigation water applied in million gallons.

Column 6: Multiply Column 5 by 36.83 and then divide by the total acreage to get acre-inches per acre of supplemental irrigation water.

C. NITROGEN LOADING FROM WASTEWATER AND FERTILIZER

1. Average concentration of nitrogen
(TKN-N + NO₃-N) in wastewater (ppm)
2. Pounds of Nitrogen per acre per year by Hydraulic Management Unit

Hydraulic Management Unit (field or parcel #)	Nitrogen from Wastewater applied (pounds per acre per year) ¹	Nitrogen from Fertilizer Applied (pounds per acre per year)

- 1: Multiply average wastewater concentration of nitrogen (in mg/L) by total wastewater volume in MG applied to management unit calculated in B 2 above. Multiply this product by 8.327 and divide by the acreage of the management unit.
- 2: Enter the amount of fertilizer applied to the management unit in pounds per acre per year.

D. COD LOADING FROM WASTEWATER FOR EACH HYDRAULIC MANAGEMENT UNIT
Please use a separate page for each Hydraulic Management Unit.

1. Hydraulic Management Unit
2. Flow weighted (average) concentration of COD in wastewater (ppm)
3. Pounds per acre per day by month (below)

Column No.			
1	2	3	4
Year	Month	COD applied (pounds)	COD applied (pounds per acre per day)
	January		
	February		
	March		
	April		
	May		
	June		
	July		
	August		
	September		
	October		
	November		
	December		
Pounds per acre per day (average) ¹ growing season			
Pounds per acre per day (average) ² non-growing season			

- Column 1: Enter appropriate year (eg 1995) that the monthly loading took place.
- Column 3: Multiply average concentration of COD by monthly wastewater volume in MG applied to management unit calculated in B2 above. Multiply this product by 8.327.
- Column 4: Divide column 3 by the number of days in the month and by the acres of the Hydraulic Management Unit.

FOOTNOTES

- 1 Add COD applied for the growing season months and divide by the total days to get pounds per acre per day of the growing season. Then divide by the acreage of the management unit.
- 2 Add COD applied for the non-growing season months and divide by the total days of the non-growing season. Then divide by the acreage of the management unit.

E. WASTEWATER CHEMISTRY DATA

Please use a separate page for each sampling point (if more than one) or if there are more than four sampling dates.

Sampling Point Identification #

Parameter	Sample Date MM/DD/YY			
Total Kjeldahl Nitrogen (TKN) (ppm)				
Nitrate (ppm)				
Ammonia (ppm)				
Biological Oxygen Demand (BOD) (ppm)				
Chemical Oxygen Demand (COD) (ppm)				
Sodium Adsorption Ratio (SAR)				
pH (S.U.)				
Sodium (ppm)				
Chloride (ppm)				
Chlorine Residual(ppm)				
Potassium (ppm)				
Phosphorus (ppm)				
Total Coliform (count/100ml)				
Specific Conductance (umhos/cm)				
Total Dissolved Solids (ppm)				
Total Suspended Solids (ppm)				
Volatile Dissolved Solids (ppm)				

F. CROP

Please use a separate page for each Hydraulic Management Unit.

1. Hydraulic Management Unit

2. Crop Nutrient Uptake

	Crop # 1	Crop # 2	Crop # 3
1. Crop harvested (type)			
2. Crop yield ¹ (tons/acre, bu/acre etc)			
3. crop yield (convert to lbs/acre) ²			
4. protein percentage			
5. protein-Nitrogen percentage ³ (TKN)			
6. protein-nitrogen removed (lbs/acre) ⁴ (TKN)			
7. Nitrate-N concentration (ppm)			
8. Nitrate-N removed (lbs/acre)			
9. Total nitrogen removed (add No. 6 & No. 8)			

- 1: If only a portion of hydraulic management unit was used to grow a crop, express 1 crop yield using the entire acreage of the management unit. For example if 300 tons of hay was taken off 50 acres of a 100 acre management unit, the yield would be 3 tons per acre.
- 2: If tons, multiply by 2,000; if bushels, multiply by weight of bushel.
- 3: Divide protein percentage by 6.25 to get protein-nitrogen percentage (except for small grains which factor is 5.70)
- 4: Multiply No.5 (protein nitrogen percentage) by No.3 (crop yield). Please note that nitrogen concentration must be expressed at the same moisture percentage as yield. If they are not the same, the former must be corrected to the appropriate moisture percentage.

G. SOIL CHEMISTRY DATA

Please use a separate page for each Soil Monitoring Unit and/or sampling date.

Date Sampled _____ Soil Monitor Unit _____

Parameter	DEPTH		
	0-12"	12-24"	24-36"
Percent ¹ organic Matter			
Nitrate-Nitrogen (ppm)			
Ammonia-Nitrogen (ppm)			
Sodium Adsorption Ration (SAR)			
Electrical Conductivity (EC) umhos/cm			
Cation Exchange Conductivity (CEC) (meq/100g)			
Texture (USDA texture)			
Percent moisture ¹			
Sodium (ppm)			
Chloride (ppm)			
pH (S.U.)			
Potassium (ppm)			
Plant Available Phosphorus (ppm)			
DTPA - Iron			
DTPA - Manganese			

1: Expressed as percent of oven dry weight of soil.

H. GROUND WATER DATA

Please use a separate page for each well.

Well Identification #

Parameter	Sampling Date MM/DD/YY			
TKN (ppm)				
Nitrate(ppm)				
COD (ppm)				
Iron (total) (ppm)				
Manganese (total) (ppm)				
pH (S.U.)				
Sodium (ppm)				
Chloride (ppm)				
Potassium (ppm)				
Specific Conductance (umhos/cm)				
Total Dissolved Solids (ppm)				
Static Water Level depth below ground surface (ft)				
Static Water Level (elevation above MSL) (ft)				

I. LYSIMETER DATA

Please use a separate page for each Lysimeter.

Lysimeter Identification #

Parameter	Sampling Date MM/DD/YY			
TKN (ppm)				
Nitrate(ppm)				
COD (ppm)				
Iron (total) (ppm)				
Manganese (total) (ppm)				
pH (S.U.)				
Sodium (ppm)				
Chloride (ppm)				
Potassium (ppm)				
Specific Conductance (umhos/cm)				
Total Dissolved Solids (ppm)				

- J. GROUND WATER STATUS REPORT- An interpretive report of the year's data with respect to ground water impacts by the facility (Please Attach).

A.13 Wastewater Land Application Sites Overlying Designated Special Resource Water

The Ground Water Rule, IDAPA 58.01.11.006, establishes policies to protect ground water quality, maintain beneficial uses, differentially protect ground water, and establish numerical and narrative ground water quality standards. IDAPA 58.01.11.300.01a designates the Spokane Valley – Rathdrum Prairie Aquifer as a sensitive resource. IDAPA 58.01.11.150.02 (Table 1) prescribes the highest level of protection for this aquifer category.

A.13.1 Land Application of Wastewater Over the Spokane Valley-Rathdrum Prairie Aquifer

Wastewater-land application systems overlying designated sensitive resource water may require additional considerations prior to permit issuance to assure the integrity of the special resource water remains intact. These considerations include but are not limited to: an in-depth evaluation of the nutrient transport to the sensitive resource water if the land application system recharges the sensitive resource water, background information on limiting nutrients in the sensitive resource water, and a design approach for limiting the nutrient transport to the sensitive resource water. This includes calculation of the nitrogen and phosphorus balance and calculation of loss to ground water.

To date, the sensitive resource water designation has rarely been used for ground water. However, extensive work has and is continuing to be done in North Idaho on land application systems overlying the Spokane Valley-Rathdrum Prairie Ground Water Aquifer.

A.13.2 Guideline Development

The CH₂M-Hill "Rathdrum Prairie Land Application Feasibility Study" was published in November 1990. Based on the information from this feasibility study, a pilot project was conducted and a report (Hayden Land Application Pilot Study) published in June 1994 by CH₂M-Hill and J. A Riley. The information from these two reports and the status of the Spokane Valley-Rathdrum Prairie as a state designated sensitive resource water, and a federally designated sole source drinking water aquifer, resulted in EPA providing grant monies for the development of guidelines. The guidelines are to specifically address the land application of wastewater over the Spokane Valley-Rathdrum Prairie Aquifer. The guidelines were developed by a Technical Advisory Group in cooperation with DEQ's North Idaho Regional Office.

Special Supplemental Guidelines

**Spokane Valley-Rathdrum Prairie Aquifer
Wastewater Land Application**

January, 1995



Idaho Department of Health and Welfare
Division of Environmental Quality

**Spokane Valley-Rathdrum Prairie Aquifer Wastewater Land Application
Special Supplemental Guidelines**

December 15, 2005

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**Spokane Valley-Rathdrum Prairie Aquifer Wastewater Land Application
Special Supplemental Guidelines**

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Part 1: The Spokane Valley-Rathdrum Prairie Aquifer

THE SPOKANE VALLEY-RATHDRUM PRAIRIE AQUIFER

This document sets guidelines for managing one of the pollution sources of the Spokane Valley-Rathdrum Prairie Aquifer: municipal wastewater. The guidelines establish conditions under which secondarily-treated municipal wastewater can be spray irrigated over the aquifer in Idaho without causing contamination to the groundwater.

The Spokane Valley-Rathdrum Prairie Aquifer lies below the surface of about 325 square miles of north Idaho and eastern Washington, and is the sole source of drinking water for the region's 400,000 people. The aquifer is composed of glacial outwash soils, making it extremely permeable, high in groundwater velocity and susceptible to contamination. Unfortunately, the vulnerability of the resource has been proven with detections of nitrates, industrial solvents and pesticides in public water supply wells. Despite many protection efforts, a few water supply wells have had to be abandoned.

Coeur d'Alene Lake and the Spokane River contribute about one-third of the flow of the aquifer. The Hayden, Spirit, Twin, Hauser and Blanchard lake watersheds make up most of the additional flow crossing the state line. At the Idaho/Washington border, total flow is estimated to be 750 cubic feet per second or 485 million gallons per day. The movement of water particles ranges from less than a foot to almost 50 feet per day, as it flow west from Idaho into Washington. The depth to the water table varies from 400 feet to only 50 feet at some points in Washington.

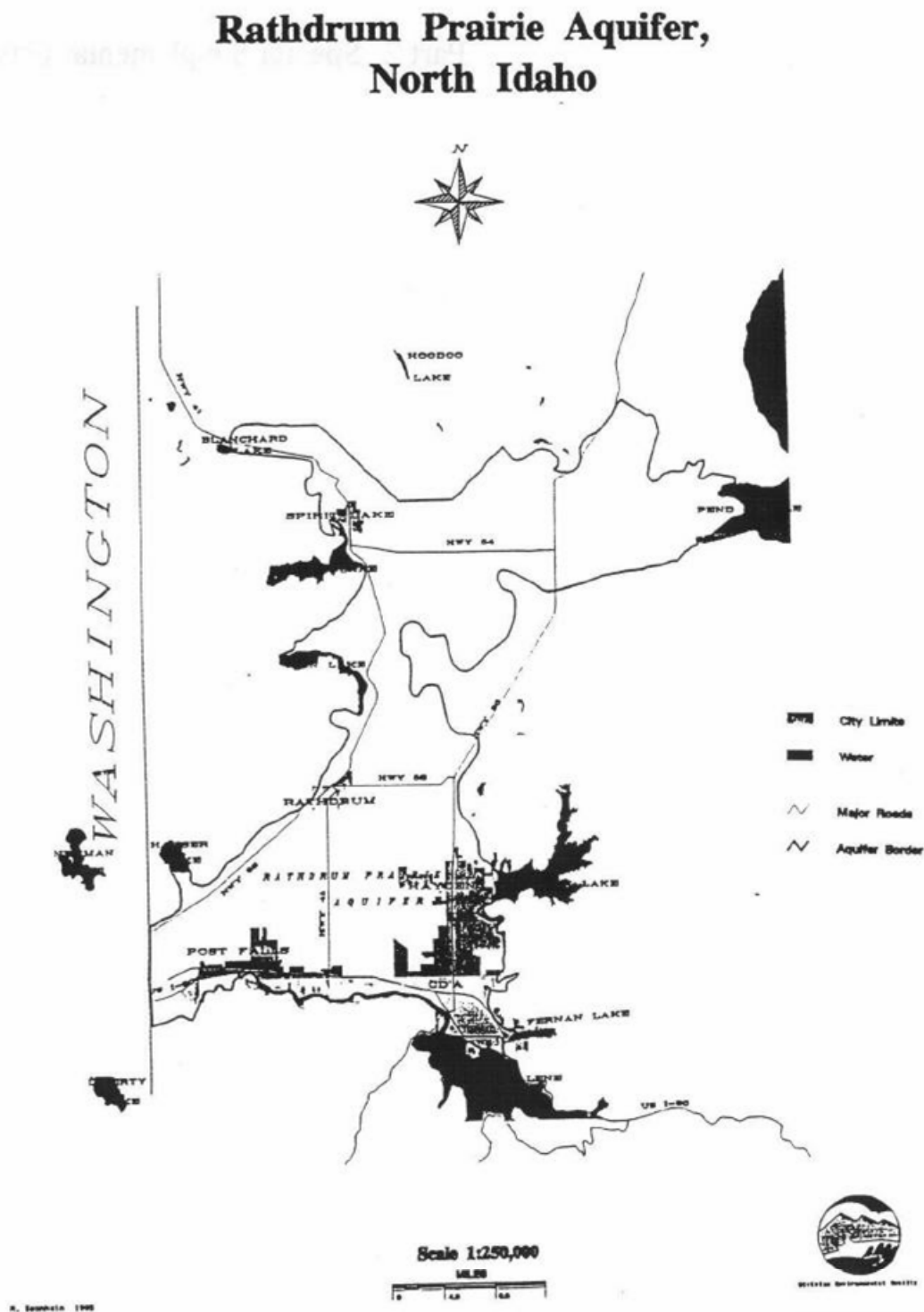
In 1978 the Spokane Valley-Rathdrum Prairie Aquifer was declared a "sole source" drinking water supply pursuant to Section 1424e of the Safe Drinking Water Act. This designation requires all projects receiving any federal funding to implement aquifer protection measures. In addition, it proclaimed the significance of this groundwater resource to the region as well as provided support for local protection efforts.

An aquifer protection project, administered in Idaho by the state Department of Health and Welfare, Division of Environmental Quality (DEQ) and the Panhandle Health District, has been in place for many years. The overriding premise for the protection project is this: Prevent contamination before it occurs. The goal is to avoid contamination and remediation, which can be extremely costly. To do this, the project has programs which can be divided into three main categories: 1) Managing pollution sources; 2) Promoting public awareness; and 3) Coordinating and cooperating with other public agencies.

The Special Supplemental Guidelines for land application over the Rathdrum Aquifer fall into the category of "managing pollution sources." Studies in the 1970s found that 60 percent of all aquifer pollutants were from sub-surface septic systems and 30 percent were from stormwater. The remaining 10 percent resulted from chemical and petroleum products.

To address the problem of septic discharges, the Panhandle Health District in 1977 adopted a regulation limiting new construction to one house per five acres over the aquifer. Higher housing densities are allowed in Sewage Management Areas (SMA). The health district enters into legally binding agreements cities and sewer districts over the aquifer to establish boundaries for SMAs. The cities agree to provide sewer to the higher density developments.

Since 1977, sewer construction has helped to mitigate aquifer contamination. There are now three municipal wastewater treatment plants treating the area's sewage and discharging effluent to the Spokane River. However, the river is reaching its assimilative capacity. The land application guidelines were developed to give the growing cities over the Rathdrum Aquifer another option for sewage disposal, while still maintaining high quality drinking water for the region's residents.



Part 2: Special Supplemental Guidelines

I. Introduction

A. Intent and Goals

This document is an appendix to the *Interpretive Supplement to the "Guidelines for Land Application of Municipal and Industrial Wastewater, March, 1988"* (Supplement) prepared by the Permits and Enforcement Bureau, Division of Environmental Quality, Idaho Department of Health and Welfare. The intent of this document is to present specific guidelines for the design and operation of wastewater land application facilities located over the Spokane Valley-Rathdrum Prairie Aquifer (Rathdrum Aquifer). The goal of this document is to provide an environmentally sound wastewater treatment and disposal alternative for communities near and over the Rathdrum Aquifer. This document will be reviewed and revised on a regular basis.

B. Special Resource Water and the Idaho Water Quality Standards

The Rathdrum Aquifer is designated a Special Resource Water under the *Idaho Water Quality Standards and Wastewater Treatment Requirements*. Special Resource Waters are specific segments or bodies of water recognized as needing intensive protection to preserve outstanding characteristics or to maintain current beneficial use. The *Idaho Water Quality Standards and Wastewater Treatment Requirements* (IDAPA 58.01.02.299.01) specifically states:

"The waters of the Spokane Valley-Rathdrum Prairie Aquifer, as described by the US Environmental Protection Agency in its designation as a 'sole source' aquifer under Section 1424(e) of the Safe Drinking Water Act, must not be lowered in quality, as relates to appropriate beneficial uses, as a result of a point source or non-point source activity unless it is demonstrated by the person proposing the activity that such change is justifiable as a result of necessary economic or social development." (1-30-80)

In 1990 the Idaho Division of Environmental Quality (DEQ) selected a consultant to study application of secondary treated municipal wastewater to the land surface located above the Rathdrum Aquifer. The completed report entitled *Rathdrum Prairie Land Application Feasibility Study* was cautiously optimistic that land application is an environmentally sound alternative for wastewater treatment over the Rathdrum Aquifer. Although the report stated that potential contaminants may be present in the wastewater, it suggested that a properly designed, sited and operated system could minimize contaminant migration, producing minimal ground water degradation.

In 1993 the Idaho Division of Environmental Quality (DEQ) commissioned a consultant to report on a wastewater land application pilot study over the Rathdrum Aquifer. This cooperative project between DEQ, the Hayden Area Regional Sewer Board and Spokane County was conducted to demonstrate land application technology and to obtain environmental data to improve the accuracy of the impact assessment and, ultimately, to determine the feasibility of using land application over the Rathdrum Aquifer as a permanent solution to wastewater treatment and disposal. The result of this work, the

Hayden Land Application Pilot Study, provides the information necessary to comply with the water quality regulations for initially establishing best management practices specific to land over the Rathdrum Aquifer.

C. Acknowledgements: Rathdrum TAC and the CH₂M-Hill Report

These supplemental guidelines are based on work conducted between 1990 and 1994 as a cooperative effort between the Hayden Area Regional Sewer Board (HARSB), the Division of Environmental Quality (DEQ), Spokane Water Quality Management Program and select individuals who served on a Technical Advisory Committee (TAC). A consulting firm, CH₂M-Hill, prepared the feasibility study, subcontracted site monitoring to Dr. John Riley, and presented the final data interpretation and report in cooperation with Dr. Riley.

The Hayden Area Regional Sewer Board (HARSB) purchased the center pivot irrigation equipment for applying wastewater and provided the piping to the pilot study field. DEQ and Spokane County, through EPA grant awards, funded the consultant to monitor and report on the pilot study site. The pilot study site was operated as a cooperative effort in the 1992 and 1993 growing seasons. At the direction of the TAC, the final pilot study report, including conclusions and recommendations, was published in June 1994. All consulting work was completed by CH₂M-Hill and its subconsultant, Dr. John Riley. The HARSB and its consultant, Kimball Engineering, are recognized for their efforts and contributions in helping make this project possible.

The Technical Advisory Committee was created in May 1991 to provide guidance to DEQ regional office staff in crop selection, center pivot system operation, soil moisture monitoring, and numerous other technical areas. Frequency of meetings depended on the amount of site activity and varied from monthly, at the start of the project, to about twice a year in late 1993 and 1994. The technical advice and direction from the TAC made the project a success. The members of the Technical Advisory Committee are acknowledged below. Their help has been greatly appreciated.

Rathdrum Aquifer Land Application Technical Advisory Committee Members

Dick Jacquot (Farmer on Land Application Site) - Kootenai County Soil Conservation District
Ken Babin - Panhandle Health District
David Brown and Kim Golden - USDA, Soil Conservation Service
Vickie Parker-Clark - University of Idaho Cooperative Extension Service
Stan Miller - Spokane County Public Works
Jonathan Williams - US EPA, Region X
Jim Kimball and Mike Wilson - Kimball Engineering (Hayden Area Regional Sewer Board)
Dale Arnold - City of Spokane, Environmental Programs Department
Dr. John Riley - Consulting Hydrogeologist (Consultant)
Larry Comer - Welch, Comer Engineers (Kootenai Perspectives Representative)

D. Pilot Study Report Conclusions and Recommendations

CH₂M-Hill's report, *Hayden Land Application Pilot Study*, presented the following conclusions and recommendations:

Conclusions

1. Land application of treated effluent has occurred over the Rathdrum Prairie Aquifer under carefully managed conditions with limited increases for monitored constituents in vadose zone water.
2. Irrigation scheduling using daily soil moisture measurements can be used to minimize migration of nutrients past the root zone.
3. Nutrients can be applied with wastewater effluent with little or no observable migration beyond the root zone of the crops.
4. The tradeoffs between crop production and fertilizer use should be evaluated for each site considering the potential for nutrient migration and the need to establish and maintain vigorous crops.
5. Crop selection is critical to the successful operation of a land application system.

Recommendations

1. Limit the hydraulic loading rate to the mean monthly crop water requirement.
2. Limit nitrogen to crop nitrogen requirements.
3. Select deep rooting crops with high uptake rates.
4. Apply effluent with an irrigation system that is well maintained and efficient in distributing water evenly across the site.
5. Assess the site soils, hydrology, and climate.
6. Prepare a management plan that integrates effluent management with suitable agricultural best management practices (BMPs).
7. Phosphorus should also be monitored, but annual application rates need not be limited to agronomic rates.
8. To determine acceptability of loading rates beyond the agronomic rates recommended, additional studies are needed.

II. Wastewater Land Application

A. Types of Wastewater Land Application Allowed

Slow rate wastewater land application systems located over the Rathdrum Aquifer are allowed when designed and operated in accordance with these guidelines. "Slow rate" application is a controlled distribution of wastewater to the land surface by spraying or surface spreading to support plant growth. Treatment is accomplished through physical, chemical and biological processes occurring in the plant/soil matrix. Overland flow and rapid infiltration land application systems are not allowed over the Rathdrum Aquifer.

B. Application Season

The season for wastewater land application over the Rathdrum Aquifer will be limited to the period when the specific crop water requirement exceeds the average monthly precipitation. Climatic conditions in the Rathdrum Prairie area generally restrict land application to the period: May 1 to October 31. The hydraulic requirements of specific crops may further shorten the application season.

C. Precipitation and Climate

The Rathdrum Prairie area is generally subhumid with warm, dry summers and cold, wet winters. The average annual precipitation is about 26 inches in the Coeur d'Alene area; but significant local variation is present, particularly west across the prairie near the state line where reported annual precipitation is about 20 inches.

When designing a land application facility, effective precipitation, rather than precipitation values, should be used. "Effective precipitation" is a calculated value (see the ***Supplement***) that represents the precipitation during the crop-growing season that is available to meet the consumptive water requirements of the crop.

D. Crop Selection

The site crop is a critical element of a successful land application system over the Rathdrum Aquifer, and each land application system should have a Crop Management Plan. The Crop Management Plan should include:

1. Selection criteria should be related to soil parameters and management capacities. Deep rooting crops are recommended. Possible crops include alfalfa, grass hay, small grains, turf grass, and poplar trees. Consultation with agronomic experts, such as the County Extension Service, is recommended.
2. Harvest schedule should be established and related to wastewater production and storage. For example, the harvesting practice for bluegrass precludes application from about mid-June until mid-August, making this an unsuitable sole crop for a municipal land application site where flows are constant or higher in the summer or when sufficient wastewater storage is unavailable.

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3. Hydraulic requirements for each crop should be included. Limited crop hydraulic information may be found in the *Supplement*.
 4. Nutrient requirements for each crop should be established. Since wastewater cannot provide enough nutrients for crop sustainability, supplemental nutrients should be provided. Studies have shown that frequent application of low fertilizer concentrations during the active plant growing periods are more effective than large, infrequent fertilization in limiting nutrient migration through the soil profile. Fertilizer type, application rate and application frequency should be established in the Crop Management Plan; and any changes should be reviewed and approved by DEQ.
 5. Rotation schedule for each crop should be provided, when applicable.
 6. Pest control strategy for each crop should be established. Pesticide type, application rate and application frequency should be established in the Crop Management Plan; and any changes should be reviewed and approved by DEQ.

E. Application Rates

The total application of water from all sources on wastewater land application sites located over the Rathdrum Aquifer is limited to the crop water requirement. The water used to satisfy the crop water requirement, also called the crop evapotranspiration, may include: precipitation, irrigation water (ground water and/or surface water), and treated wastewater.

$$\text{crop water requirement} = \text{precipitation} + \text{irrigation water} + \text{treated wastewater}$$

For wastewater land application sites located over the Rathdrum Aquifer, the hydraulic loading rate is identical and equal to the crop water requirement. The actual daily application volumes may vary daily and are affected by crop type, plant growth cycle, precipitation, evaporation, and available water capacity of the soil.

1. Design application rates: For initial design, the wastewater application rate will be the estimated crop water requirement minus the effective precipitation based on a 5 to 10 year precipitation recurrence. The results of a statistical analysis of precipitation in the Coeur d'Alene area from 1950 through 1993 (taken from an unpublished 1994 DEQ document "Coeur d'Alene Precipitation Analysis and Recommended Precipitation Values for Wastewater Land Application on the Rathdrum Prairie") are provided in the following table:

Recommended Design Precipitation Values for Rathdrum Prairie Sites (based on 1950 - 1993 Coeur d'Alene area data)			
Month	Average Precipitation	Design Precipitation	Recurrence Period
May	1.99"	3.15"	6.7 years
June	2.00"	3.04"	5.4 years
July	0.86"	1.65"	6.1 years
August	1.24"	2.32"	6.3 years
September	1.11"	1.79"	6.1 years

2. Supplemental irrigation: Since 5 to 10 year recurrence precipitation values are used to compute design wastewater application rates, in most years supplemental irrigation of the crop will be needed to insure vital plant growth. Supplemental irrigation can be treated wastewater, agricultural irrigation water, or a combination of the two.
3. Daily application rates: For daily operations, soil moisture instrumentation will be used to determine application rates and frequency. Soil moisture instrumentation will be installed on the site and will be monitored daily during the application season. The initial soil moisture threshold is 10 centibars, and wastewater application is allowed only when the soil moisture value (in centibars) as measured by the site instrumentation is equal to or drier than the threshold. Wastewater will not be applied when the soil moisture value (in centibars) as measured by the site instrumentation is wetter than the threshold value, except during periods of extreme climatic conditions. Threshold values wetter than 10 centibars may be approved by DEQ if satisfactory scientific evidence is presented that the lower values will not increase wastewater movement past the root zone.
4. Extreme climatic conditions: During months when precipitation exceeds the 5 to 10 year recurrence design precipitation values, wastewater may be applied at the design rate even if the soil moisture levels are high or saturated soil conditions are present.

F. Nutrient Loadings

1. Nitrogen will be limited to the crop nitrogen requirements. For most crops, nitrogen sources are wastewater and fertilizers. The nitrogen application rate should include a fraction above crop uptake to allow for losses that occur in the soil. The fraction should be based on soil and soil water testing, but may initially be 10%-20%. Since nitrate is more mobile than other forms of nitrogen, if it is used, then soil moisture monitoring should be used to schedule irrigation and limit conditions that enhance leaching.

2. Phosphorous should also be monitored, but phosphorous application rates are not limited to the crop requirements. Most soils have a generous, but not unlimited, capacity to absorb phosphorous and limit its mobility. However, since this capacity is finite, the soil phosphorous level should be monitored to ensure the soil capacity is not exceeded.

G. Higher Application Rates

To determine acceptability of wastewater application rates beyond the rates recommended, additional studies are needed. The extent of the studies will depend on loading rates, nutrient forms, site specific conditions, and management objectives. For example, the form and concentration of nitrogen plays a significant role in evaluating application rates. Application of effluent at rates above monthly hydraulic rates may be practical if nitrogen is in the form of ammonia. However, because of concerns regarding leaching of synthetic organics and other environmental contaminants without sufficient treatment, an extensive study may be justified. These studies may include:

- More extensive and frequent effluent monitoring
- Unsaturated zone monitoring below the root zone
- Ground water monitoring
- Crop suitability

Application rates beyond the recommended values may be acceptable if additional technical information and studies are provided that substantiate aquifer protection.

H. Commercial/Industrial Wastewater

Land application of commercial or industrial wastewater on the Rathdrum Prairie is not allowed. Exceptions may be granted only if the constituents and concentration levels in the industrial/commercial wastewater do not vary significantly from treated municipal wastewater.

III. Site Selection Criteria

A. General

The evaluation of a site as a potential wastewater land application area requires consideration of a number of related site specific elements. An unacceptable evaluation on just one site element is sufficient to eliminate that site from consideration. Although the major site characteristics are discussed in this section, other site specific elements should also be considered and evaluated as warranted.

B. Soil

Not all soils over the Rathdrum Aquifer are suitable for land application of

wastewater. Excessively stony and drained soils, such as the Garrison very stony silt loam, show poor potential for land application treatment of wastewater and should be avoided. Water holding capacity of the soil is a critical factor in applying wastewater without carrying nutrient load below the root zone. Soils that are excessively drained often do not have the capacity to hold the wastewater load long enough for the plants to extract nutrients. The result is poor crop production and excessive leaching.

Sites with soil classifications having good soil moisture holding capacity will be considered for permitting. A soil survey of the proposed site that includes test borings and soil classifications should be performed by a qualified soil scientist. Past cropping history of the site will also give an insight into the soil type and water holding capacity. Therefore, this information should also be submitted with an application.

C. Buffer Zones

The buffer zone for wastewater land application sites over the Rathdrum Aquifer will be as specified in the **Supplement**, Table 3 - Municipal Wastewater Buffer Zone Treatment Sites. The development potential near potential land application sites will be considered: sites in "rural" areas that have a potential of being adjacent to "suburban or residential" uses will be evaluated for buffer zones according to the other uses.

D. Land Use

Land use suitability determination for a wastewater land application site is the responsibility of local government. Anyone proposing a wastewater land application project over the Rathdrum Aquifer should inform the responsible planning and zoning department and obtain preliminary zoning approval prior to submitting an application to DEQ. Wastewater land application projects may be allowed in an agricultural or rural zoning, but such projects in other zone classifications may require a conditional use permit and may require a public hearing. Public meetings to present the proposed land application project to neighbors and the community are recommended.

E. Wellhead Protection

The well head protection zone for wastewater land application sites over the Rathdrum Aquifer will be as specified in the **Supplement**, Buffer Zones - Wellhead Protection. Drinking water wells closer than 100 feet to the land application site are not allowed. Wells between 100 feet and ¼ mile from the land application site are considered within the influence zone of the site and should be evaluated according to the **Supplement** by a qualified hydrogeologist or professional engineer with appropriate expertise.

IV. Wastewater Lagoons

A. General

Wastewater treatment systems near the Rathdrum Aquifer may be classified into two categories: single outfall systems and multiple outfall systems. Single

outfall systems, such as Spirit Lake, use land application exclusively and, therefore, should completely contain all treated wastewater for treatment and disposal during the application season. Multiple outfall systems, such as Hayden, use an outfall to surface water during the non-growing season. Wastewater lagoon design for either system type should be based on a detailed monthly water balance.

B. Single Outfall Systems

Single Outfall Systems should have storage lagoon volume to completely store treated wastewater for the 6 - 7 month period when land application is not allowed. A detailed lagoon water balance should be created for this system that considers: precipitation, evaporation, seasonal wastewater variances, and temporary growing season application cessation.

C. Multiple Outfall Systems

Multiple Outfall Systems should have two storage lagoons systems: operations lagoons and seasonal lagoons. Operations lagoon storage should be provided for temporary growing season application cessation due to weather conditions or harvest schedules. This lagoon volume should be based on an analysis of the climate and the crop, but it should accommodate at least one week of wastewater flow during the application season. Seasonal lagoon storage should be provided for periods in the fall and spring when neither surface water discharge nor land application is allowed. This storage lagoon volume should be based on an analysis of average climatic and environmental conditions.

D. Lagoon Criteria

Wastewater lagoons often contain millions of gallons of partially treated sewage that is a potential ground water contamination source. Wastewater lagoons located over the Rathdrum Aquifer should be designed and maintained to a higher standard than lagoons in other areas due to the adverse affects a leaking lagoon would have to the aquifer. All lagoons should meet the leakage criteria (500 gallons per day per acre for most lagoons) found in the Recommended Standard for Wastewater Facilities published by the Great Lakes-Upper Mississippi River Board of State Public Health and Environmental Managers (10 State Standards). The following criteria will be used for lagoons located over the Rathdrum Aquifer:

1. Small lagoons and temporary lagoons: Small lagoons are lagoons with a design volume less than 500,000 gallons. Temporary lagoons are lagoons that store wastewater for less than two months annually. Small lagoons and temporary lagoons should be constructed with a synthetic liner (60 mil polyethylene or equal), and they should be leak tested at least once every five years.
2. Large lagoons and storage lagoons: Large lagoons are non-temporary lagoons with a design volume greater than 500,000 gallons. Storage lagoons are lagoons that store wastewater for more than two months annually. Large lagoons and storage lagoons

should be constructed with a synthetic liner (60 mil polyethylene or equal), and they should have a second level of protection approved by DEQ that includes, but is not limited to, the following:

- a) a system that continuously monitors lagoon seepage, or
- b) a double liner system, or
- c) additional liner strength and reliability (such as extra thickness)

V. Monitoring and Sampling

A. General

Monitoring and sampling are essential elements of managing land application sites over the Rathdrum Aquifer to ensure that land application activities are not affecting the aquifer water quality. A monitoring and sampling program is unique to each land application site, but the program should include:

- 1. wastewater effluent sampling
- 2. soil moisture monitoring
- 3. soil water sampling
- 4. soil sampling
- 5. ground water monitoring and sampling

All monitoring and sampling will be in accordance with the *Water and Soil Monitoring* section of the **Supplement**.

B. Wastewater Effluent Sampling

The analytical parameters for wastewater effluent sampling will be in accordance with the ***Guidelines for Land Application of Municipal and Industrial Wastewater*** and will include, but not be limited to: TDS, COD, BOD₅, TSS, total coliform, pH, phosphorous, TKN, ammonia nitrogen and nitrate nitrogen. The frequency of sampling is dependent on the consistency of the effluent constituents, but in no case will the frequency be less than once per year during the land application season.

Complete wastewater characterization is a necessary element of a properly designed and operated land application system. Although many potentially toxic constituents receive some degree of treatment (volatilization and biogradation of organics) or are retained in the soils (heavy metals), some toxic elements may have a detrimental effect on the crops, livestock or the ground water. The land applied wastewater should not create phytotoxicity and food chain contamination. Regular testing for cadmium, copper, zinc, nickel, and other potentially toxic constituents may be necessary. Wastewater facilities that have industrial or commercial contributions should have an active and effective pretreatment program.

C. Soil Moisture Monitoring

Soil moisture will be used to determine the irrigation schedule, and soil

moisture data will be used to manage crop vitality. A tensiometer or soil moisture sensor clusters will be installed in accordance with the monitoring plan, and soil moisture data will be recorded daily during the application season. A soil moisture based irrigation strategy may allow more effluent application in drier years. (See this document, Section II, Paragraph E.3. *Daily Application Rates*)

D. Soil Water Sampling

Soil water sampling will be in accordance with the *Water and Soil Monitoring* section of the **Supplement**. At least two lysimeter sampling points will be used at each sampling station: within the root zone and immediately below the root zone.

E. Soil Sampling

Soil sampling will be in accordance with the *Water and Soil Monitoring* section of the **Supplement**. In addition to the analytical parameters specified in the **Supplement**, phosphorous will also be sampled and monitored.

F. Ground Water Sampling and Testing

Each land application site will have a ground water monitoring plan. Ground water sampling and analytical parameters will be in accordance with the **Supplement**. Each site will have at least three ground water monitoring wells: one up gradient and two down gradient of the ground water flow. Before land application commences on a site, sampling and testing will determine the existing background levels of the sampling parameters. The land application management goal is: no detectable increase in wastewater related constituents in the ground water as determined by the monitoring program.

VI. Operations and Maintenance

A. General

A successful land application system requires diligent operations and maintenance. Individuals who manage the site should have expertise and knowledge of agricultural practices as well as wastewater treatment processes. According to the pilot study report, wastewater land application over the Rathdrum Aquifer can comply with the intent of the Special Resource Water designation only **under carefully managed conditions**.

B. Management Plan

Each land application site should have a management plan that integrates effluent management with suitable agricultural best management practices. The plan should address specific program elements that include: effluent, nutrients, crop selection, crop vitality, soil moisture, chemical fertilizers, and pesticides. A higher level of chemical fertilizer management than employed in normally accepted agricultural practices may be necessary to limit nutrient migration below the root zone.

C. Daily Soil Moisture Monitoring and Irrigation

A daily reading of soil moisture at several places on a land application site will allow integration of crop needs and wastewater application. A soil moisture reading that indicates soil saturation needs to be established for each land application site. (See this document, Section II, Paragraph E.3. *Daily Application Rates*.) Irrigation based on soil moisture will allow higher application rates than average in some of the drier or warmer growing seasons.

D. Crop Production and Fertilizers

The primary function of a wastewater land application site is the treatment of wastewater. While a viable and healthy crop is necessary for optimum wastewater treatment, chemical fertilizers that are commonly used to promote crop production can become the primary nutrient source for aquifer degradation. Fertilizer application should be balanced -- sufficient to produce good plant growth but insufficient to produce a detectable nutrient level below the plant root zone.

E. Disinfection

Wastewater disinfection will be as specified in the *Supplement* as related to buffer zone requirements.

F. Irrigation Systems

The irrigation system should be well maintained and efficient in distributing the water evenly across the site. The goal for irrigation efficiency is 75-90%. The irrigation system should be operated to reduce spray drift.

Part 3: Miscellaneous Information

Terms and Definitions

agronomic - Activities relating to field crop production and soil management. "agronomic rate" as related to land application means the amount of water or nutrients that can be utilized by a crop over time.

beneficial use - Any of the various uses which may be made of the waters of Idaho including, but not limited to, domestic water supplies, industrial water supplies, agricultural water supplies, navigation, recreation in and on the water, wildlife habitat, and aesthetics.

BOD₅ (Biochemical Oxygen Demand) - A measure of the dissolved oxygen in wastewater used by microorganism in the biochemical oxidation of organic

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matter over a 5 day period. It is often used to determine the efficiency of wastewater treatment facilities.

centibar - A unit of pressure equal to 1/100th of a bar (1 bar = 10^6 dynes per square centimeter). In soil monitoring, a measurement of soil moisture with decreasing values corresponding to increasing soil moisture.

COD (Chemical Oxygen Demand) - A measure of the oxygen-consuming capacity of inorganic and organic matter present in water or wastewater.

DEQ - The Idaho Department of Health and Welfare acting through the Division of Environmental Quality (DEQ).

lysimeter - A device for measuring and collecting the water percolating through soil.

nutrient - Chemicals such as nitrogen, potassium and phosphorus that are needed by plants in the soil for satisfactory plant and crop growth.

TDS (Total Dissolved Solids) - Small solid particles in water or wastewater (generally 1 micron or less in diameter) that are not removed by filtering or settling.

tensiometer - An instrument for measuring moisture content of soil.

TKN (Total Kjeldahl Nitrogen) - The nitrogen content of a material that is analyzed by a Kjeldahl method. This method measures the sum of free ammonia plus organic nitrogen.

TSS (Total Suspended Solids) - Solids in water or wastewater (generally 1 micron or more in diameter) that can be removed by filtering or settling.

uptake rate - The amount of water or nutrients used by plants over time.

vadose zone - The unsaturated area in the soil above the water table.

Wastewater Land Application Permit Program

Wastewater land application in Idaho is regulated by state law and is administered by the Division of Environmental Quality through a permit. This Wastewater Land Application Permit (WLAP) sets forth the general requirements as well as the site specific requirements for each permitted facility. Presently, Idaho has over 100 permitted wastewater land application sites.

An application for WLAP may be obtained through the DEQ regional office in Coeur d'Alene. Prior to submittal of the application packet, applicants are encouraged to schedule a pre-application meeting with DEQ staff. An initial application for a permit can take six months to process through the regulatory and administrative steps. Permits are issued for a five year period and are renewable.

Additional Information Sources

Wastewater Land Application Permit Program:

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Editor's Note: These contacts have been updated for December, 2005.

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